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STRAY STRAWS FROM DR. C. C. MILLER.

A GLORIOUS SPRING for bee-keepers.

THAT FEEDER of H. R. Boardman is hard to beat as an entrance-feeder.

CRIMSON CLOVER, according to J. C. Smith, in *American Bee Journal*, does best sown with buckwheat.

TEN FEET OF SNOW covered four hives for more than eleven weeks, and the bees came out all right.—*B. B. J.*

DR. J. P. H. BROWN, of Augusta, Ga., has taken charge of the Southern Department in the *American Bee Journal*. Good man.

I CAN NOT RESIST the impression, from all I've read in *GLEANINGS*, that A. I. Root doesn't entirely approve of Electropoise and Oxydonor.

THE LIME, as a honey-tree, is a little confusing. Sometimes it means the linden, or basswood, and sometimes it means a small tree much like the lemon.

STATISTICAL REPORTS received by *GLEANINGS* seem encouraging, and yet elsewhere reports are quite discouraging, losses even reaching 50 and 80 per cent.

BASSWOOD, says Dr. Brown, *American Bee Journal*, is rarely found south of latitude 33°, and then only on low land. The European variety does better than the common.

A NEW SMOKER, Zaehringer's, is described in German bee-journals. It's nothing more nor less than an atomizer, or sprayer, with a big rubber ball. But it's well spoken of.

THE ANCIENT ROMANS believed that bees originated from the decaying carcases of cattle. [There was a good bit better reason for believing this centuries ago than for putting faith in Electropoise and Oxydonor.—*Ed.*]

GRAVENHORST says that young queens that do not issue with a swarm, but merely emerge

from the cells and remain in the hive, are, as a rule, much later in becoming fertile than those issuing with a swarm. He prefers the latter queens.

DOOLITTLE defines his position as to spreading brood, in *American Bee Journal*. He would spread only when the queen does not keep filled with brood the combs well covered by bees. That's all right, isn't it? [Yes, sir; and when that rule is followed, no bad results will follow.—*Ed.*]

FARMER HARDWEAR at the telegraph office.—“How much will you charge to telegraph my son \$300 at college?”

Operator.—“Two dollars.”

Farmer Hardwear.—Gosh! that's cheap! Yer's the \$2. Send it quick as lightnin.”—*Chicago Record*.

“MELILOTUS is one of the very few plants which are able to draw their supply of nitrogen from the air; and hence by and through its biennial decay it furnishes the most valuable and most expensive factor in commercial fertilizers free of cost, and in the best form.”—*Prof. S. M. Tracy*, Director Miss. Exp. Station.

DOOLITTLE's observation, p. 361, as to colonies deserting in spring, leaving nice brood and plenty honey, agrees with mine, and in every case I think there has been more brood than the bees could cover. Is it because the bees have become so reduced in numbers that they desert rather than stay and see that brood die?

DWARF ROCKY MOUNTAIN cherry promises well with you, friend Root, but it may be well to add a caution. It was boomed at the World's Fair, but I heard a company of horticulturists denounce it as a humbug, and if I remember rightly the veteran Edgar Sanders said it formerly grew wild on the lake shore near Chicago.

A ASTOR, in *Revue*, says his hives containing 6770 cubic inches inside the frames are too small. Dzierzon, in his “Rational Bee-keeping,” says, “A space of about 3000 cubic inches will be sufficient in most districts; nevertheless

less, a space of 5000 to 6000 inches will do no harm, if there be no difficulty in partitioning off the superfluous space." Quinby thought 2000 was enough for the brood-nest. An eight-frame dovetail has 1579 inches; a ten-frame, 1964.

GRAVENHORST advises thus with respect to after-swarms. Wait till the first after-swarm issues; cut out all queen-cells, and return the swarm. Friend Gravenhorst, I believe some who desire no increase might carry the plan still further. Kill or remove the queen of the prime swarm, letting the swarm return, then treat the second swarm as you advise.

OVEREATING shortens a man's days in more ways than one. It shortens the number of days, and it shortens the number of waking hours in each, for he must sleep off the effects of the surfeit. [I wish this same sensible good advice had been given me years ago. All the same, I am and have been profiting by it for the last six months. Better? Of course, I am. I believe at least half the ailments are indirectly traceable to this one thing.—Ed.]

UNITING. "A colony having a laying queen will accept without any trouble any colony which has been queenless for at least 24 hours. Consequently, if you want to unite two colonies standing side by side, deprive one of its queen; and the next day, or the day following, hang the combs with adhering bees of the one colony in the second story of the other colony, immediately above the bees below, and remove the empty stand."—C. F. Muth, in *American Bee Journal*.

"SEPARATING SWARMS when two or three cluster together.—If for three swarms, tier up three hives with an entrance to each on a stand; raise the bottom hive an inch from the board to give the bees room to go in; shake the bees in front of the hives, stop the entrances to the two upper ones, and let them settle for half an hour; then take the top hive and put it on a stand; put the second on another, and let the bottom one remain, and your three swarms and queens are separated."—P. D. Wallace, in the *American Bee Journal*.

"WE BOOMED the T-super arrangement in our 1895 catalog harder than ever, putting in a nice wood-cut."—GLEANINGS, p. 394. Yes, and right under that nice cut you say, "We consider the section-holder superior." How's that for boomerang the T super? No wonder your packers "hardly know what it is." And then you want to make out an old stove fits me! I'll fit you in an old stove if you don't look out. [The quotation taken alone as above doesn't boom the T super very much. But in the same paragraph we refer to others, including yourself, who think the T super the better. The paragraph as a whole gives it a good prominence. Perhaps "boom" was too strong a word.—Ed.]



FEEDING BEES.

FEEDING BACK TO HAVE UNFINISHED SECTIONS COMPLETED.

By H. R. Boardman.

The last few years have brought to the surface considerable discussion in regard to this kind of feeding, and a diversity of opinion still prevails among very good bee-keepers in regard to it. About the only important thing left yet unsettled is, whether it pays or not. There have been some figures given the public, upon this question. It is said that figures will not lie. I can not deny it; but they are sometimes manipulated so as to be misleading. I will give you the benefit of my experience and opinions, without figures.

The object sought is, to follow some plan by which the feed will be stored in the sections as much as possible. This the bees are not disposed to do so long as they have room in the combs near the brood-nest. I have tried two plans. One is, to deprive the brood-hive of combs as far as possible, and thus compel storing in the sections. The other is, to deprive the colony of a brood-nest, making them queenless, with only enough brood to raise a queen. In the first place, I put a swarm upon empty frames with starters only, by shaking them out (or drumming out) from a populous colony, leaving the old colony to raise a young queen. I feed immediately; and as soon as the queen begins laying in the newly started combs I put on the sections and continue feeding rapidly for 25 days. This gets most of the feed into the sections, excepting that used for brood and comb-building, and a little stored outside of the brood-nest in the new combs. These combs will be nice worker-combs mostly, and will, I think, be worth all they cost.

QUEENLESS COLONIES.

The second plan—that of depriving the colony of a brood-nest by making it queenless—throws the bees all, or nearly all, into the sections, where there is comb already built, and they will continue the work there mostly, as there seems to be no inducement to build comb in the brood-chamber. The plan I have followed in my experiments is the same as already given, except that I remove the queen back to the old colony as soon as a few eggs appear in the newly started combs, sufficient to hold the bees and enable them to build queen-cells. I had great hopes for this plan, and, indeed, it has some advantages. But it must be borne in mind, that, although the bees build but little comb in the brood-chamber, being queenless, the combs will be imperfect, and filled with the feed. To remedy this I cut them out as fast as

built, and allowed the bees to carry back into the sections the honey they contained. But there is so much upon the unfavorable side of this question that I am not prepared to recommend this kind of feeding as very practical, and I think it would be most likely to prove unprofitable. By way of experiment upon a small scale, it is well enough. Very much is to be learned by such experiments. I could give figures upon this kind of feeding, that would show a profit very clearly; but in giving them, many of the unfavorable details would be left out, lost sight of. It involves a great amount of work and care, from beginning to end, and I have nearly always failed in the most important part—that of getting a choice finished product. Unless the sections are unsealed before they are put on they will be finished with a rough and patchy look, and will be, according to my experience, more or less stained with propolis, which gives them an untidy appearance.

WHAT TO DO WITH UNFINISHED SECTIONS.

The best and most profitable way for the average bee-keeper to dispose of unfinished sections, I am convinced, is to extract all that will not sell as second grade for as much as extracted honey will bring, and use them for bait sections the next season. There is a value in these nice white combs for this purpose, that is not appreciated by very many.

SUGAR HONEY.

There have been a good many suspicious hints dropped in the past few years about sugar honey. Cheap sugar has been the tempter. But nothing has materialized from these suggestions but talk, so far as I know. I am going to consider only the practical phase of this question, and leave the scientific part to the scientist. So far as feeding sugar to be stored in the sections is concerned, it is sufficient to know that there is no inducement for such a practice. Until bee-keepers have the courage to feed sugar for stores in the brood-chamber to the full extent necessary for that purpose, there is no use in wasting our valuable time discussing the very remote possibilities of sugar honey. It would seem like very poor economy to fill the brood-combs with the choicest honey from the flowers, and the sections with sugar, even if it were practical, when just the opposite is desirable, and much easier to accomplish. It would be somewhat like the economy in dairying, of feeding the cream to the calves and pigs, and saving the skimmed milk for use.

MAKING NEW COLONIES: NATURAL COMBS VS. FOUNDATION.

After the honey season is over, and that mysterious impulse to swarm is abated, new colonies may be made and built up from sugar feed. Natural combs built at this time will be almost entirely free from drone comb, and will compare favorably in perfection with combs drawn from foundation. There is a large force of workers lying idle; and the busy season being

over makes it somewhat of a temptation to do such work at this season. I have thought it just as well to wear these bees out as to let them live in idleness and die of old age, provided, of course, there was any profit in it. I have a good many of these natural combs in use now that I have built in this way in the last few years, and they give very good satisfaction. I reasoned that, with the prevailing low price of sugar, and the high price of wax, together with the late succession of poor seasons, bee-keepers ought to be able to become producers of wax by raising natural combs, instead of consumers by using foundation. I do not really think there is much money in it. I only hope it may help in the sharp struggle for survival, especially in poor localities.

This work gives an excellent opportunity for superseding the old queen—a very profitable work. In any of these operations described, if no increase is wanted the bees may be united back upon the most desirable combs. I have no doubt that new combs are best for building up in spring, but old ones may be better for wintering outdoors.

East Townsend, O.

WHAT CONSTITUTES A GOOD BEE?

NINE POINTS CONSIDERED IN THE ORDER OF THEIR IMPORTANCE.

By S. E. Miller.

What are the essential qualities in a colony of bees? Perhaps it would be hard for all bee-keepers to agree on this subject; but I have given some thought to it lately, and after thinking the matter over I would place the points about as follows:

1. Prolificness of the queen.
2. Honey-gathering qualities of the workers.
3. Hardiness in wintering.
4. Disposition of workers—gentleness, etc.
5. Non-swarming.
6. Comb-building.
7. Longevity of queen and workers.
8. Size of workers.
9. Color.

Probably no one will agree with me in the exact order I have placed the points of excellence, and probably no two bee-keepers would agree exactly. I am not speaking of the manner in which a colony would be judged at a fair; for at a fair they might be judged very unfairly; for at best it is little more than guess-work. The judge, in all likelihood, has no knowledge of the working qualities of the colony, so that size and color would be apt to guide him mainly in rendering his decision.

But what I am speaking of is the colony of bees that will earn dollars and cents for their keeper. And now let me explain why I have placed the points of superiority as shown above. Let us consider the first point. There, I be-

lieve, nearly all will agree with me, that the first essential to a No. 1 colony is a prolific queen that can be relied upon to produce a host of workers at just the time when most needed; and without a prolific queen it matters not how good the workers are. If there are not enough of them we can not expect them to store a large quantity of honey. Having a queen that will place a strong force on the stage of action at the time when most needed, we want that force to get a move on them and roll in the honey while their neighbors are hanging on the shady side of the hive or coming the "washboard act" around the entrance. So we see that, having these two points combined, we come very near having a perfect colony already. But let us proceed to the third point.

Having stored a large quantity of honey this season we want them to do as well next year again; and in order to attain to this end it is essential that they be able to withstand the severe winter weather without having to be put into a feather bed. To those who winter in cellars this point might be considered of minor importance; but we do not all winter our bees in cellars, and probably there are many of us who never will; therefore we want colonies that will pass the winter with the least possible loss in numbers, and come out strong and healthy in the spring.

Fourth, gentleness. No one, I presume, will deny that this is a desirable trait in bees, and probably some would place it above some of the points named above; but should a cross colony, of strength equal to one of a gentle disposition, gather, say, a third more honey in a given time, I believe I would manage to get along with the cross ones for the extra amount of honey they store.

Non-swarming, or the absence of a desire to swarm, is a trait that the comb-honey producer would probably place among the first qualities to be desired; but so long as swarming comes with prosperity and seasons of large crops of honey, and non-swarming is accompanied by failures, I should consider swarming the lesser of the two evils, if swarming may be considered an evil.

Sixth, comb-building. In order to produce a first-class article of comb honey we want bees that will go to work at it in a business-like manner, building straight even combs, and attaching them securely to the sections all around. But as this also depends largely upon the honey-flow and the condition of the colony as well, it can hardly be considered as one of the first essentials of a first-class colony; for, in my experience, almost any fair to good colony will do good work in this line provided there is a sufficient flow of nectar for a number of weeks at a time. As to the whiteness of the cappings, it is merely a matter of fancy; for the honey inside of a comb having a translucent appearance is as good as and often better than that having the whitest cappings. However,

so long as the market demands white combs it is to the bee-keeper's interest to produce such.

Longevity in queens is something to be desired, but is not of such great importance when we consider that every practical bee-keeper can rear an abundance of queens at very little cost; yet a queen that will do good service for three years is worth more than one that wears out in one season, and we should certainly prefer the former to the latter kind. As to longevity in the workers, it seems no one has given the matter much thought or study. No doubt a worker that would live and do good work for sixty days at the season when most needed would be worth more than one that wears out from overwork at from forty to forty-five days; but probably it will be a long time before any one sets up the claim that he has a strain of bees in which the workers live to a greater age than those of the ordinary kind. Probably under the same circumstances—that is, having the same care from the egg to the adult, doing the same amount of work, having the same protection from cold, etc., one worker will live as long as another.

Large size, in both queens and workers, is something we admire; but who would care to have them as large as the fellow said they grew to be in Germany (as large as sheep) if they gather no more than those of smaller size? Yet the fact remains, that the larger bee may have a proportionately longer tongue than the smaller one, so that size should not be lost sight of in breeding for the best.

Color—there is my ninth and last point of excellence. Won't some of the yellow-banders be ready to jump on to me for placing color at the tail end? Probably I should have made ten points, while I came so near it; but I will leave that for some other fellow to put on. Had I mentioned ten points, color would certainly have been the tenth—not that I am opposed to beautiful bees, or that I should not prefer them provided they were as good as their more homely cousins; but really if we had a strain of bees that would gather one thousand pounds of A No. 1 honey per colony in a season, would it matter whether they were brown, yellow, green, or red? Are the fastest trotters the handsomest of the horse kind? Are the prize-winning Jersey cows the prettiest cattle? or have the breeders who bred them up to the high standards of excellence bred for beauty, or for the profit there was in them? If any one can show that color or beauty should be placed above any one of the other eight points I have named, I am ready to give him a cooky; and yet have not many bee-keepers from the Atlantic to the Pacific, from Maine to Texas, been chasing after yellow bands, instead of large crops of honey, for the last three or four years? Nearly all breeders of the so-called golden or five-banded bees claim that their strain is bred for business; but who among them

will stand up and say that, while breeding for yellow bands or solid yellow, he has all the time kept in mind, paid close attention, and given painstaking care to the other eight points of superiority to be desired in the honey-bee of the future? Who is he or she? Where do they live? I hear no answer, but the owl repeats the words—

“Who who-who-are you?”

Bluffton, Mo.

[This is another excellent article, and I could not help saying “Yes, yes,” to every point friend Miller gave. I wish all bee-keepers, especially queen-breeders, would read this over carefully. Yes, friend Miller, if you had enumerated 100 good points I believe I should have put color at the bottom of them all. It would not do to give it even a favorable position, for then some queen-breeders and some bee-keepers would put it at the top. In fact, I wish color could be buried clear out of sight, and stay there—not that I despise beautifully colored bees, nor that I have any grudge against bee-keepers or queen-breeders who rather favor the yellow bands; but I am afraid color has already had a rather detrimental influence on the real bread-and-butter side of bee-keeping.—ED.]

Our Hive Symposium.

THE JUMBO SIXTEEN-FRAME HIVE.

ONE LARGE SINGLE-STORY HIVE; SUCH HIVES MANAGED BY A YOUNG GIRL OF 18; QUEEN-EXCLUDING HONEY-BOARDS DISPENSED WITH AND NO SWARMING.

By N. E. Doane.

Mr. Editor:—As you seem to be interested in the item I gave you in regard to the 16-frame L. hive, I will try to tell you more about it. As I make it now I call it the “Jumbo hive.” I commenced keeping bees some twenty years ago. I have used the eight-frame L. hive, also the ten, and the Simplicity hive. I commenced with the six-pound box for surplus honey, then used the prize box, in its day; then came the four-piece section and the Heddon case; the one-piece section and the wide frame. All these were used and found good until something better took their place. With me, a few years ago when the bee-keepers of our land were cutting their ten-frame hives down to eight, I cut mine the other way (some of them), and made a 16-frame hive instead. My main reason for doing so at that time was to prevent swarming, and to keep the bees storing honey contentedly throughout the season; but I soon found that a 16-frame hive covered with wide frames, and one extracting-comb, to call the bees up, was no preventive. A second story was tried on top of this, the extracting-comb giving passage to the second set of wide frames. This worked well for getting lots of honey; but much of it was travel-stained. So you see these faults in the hive I was using led me to devise something better, which came in the shape of the Jumbo hive.

Now you may ask, “What is the Jumbo hive?” Just imagine you are here, and I will tell you the best I can. Now you are here. Let us play that an eight-frame hive is made of india-rubber. You take hold of one side and I the other, and pull; now pull hard; how much has it stretched? Only twenty inches. Pull again. Now we have it 22 inches. Now give it another awful jerk. There! now we have stretched it until it is 24 inches. That is wide enough for 16 frames and a thin division-board.

There, now let us get hold of the ends and give them a jerk. Hold on! you have pulled too hard. We want to pull them only just far enough so we can use a board $\frac{1}{2}$ inch thick and $9\frac{1}{2}$ inches wide for the brood-frames to rest, or $9\frac{1}{4}$ in. with metal rabbets nailed on. Let us get inside of it and take hold of the top edge of the boards which the frames rest on. Now let's pull away at this until we get it at least five inches above the top of the brood-frames. It is getting to be quite a good-sized hive, isn't it? When we commenced pulling, the entrance was in the end of the hive; we have not changed it, except to make it a little larger; but it is now in the side of the hive. We have also changed the L. frame to a crosswise one, without marring the frame in the least.

Let us sit down now and see what we have done. We have the length to the width, and what was the width to the length. But we don't want it india-rubber any longer, but good wide inch lumber, with the bottom nailed right on tight. Now lay a strip of $\frac{1}{4}$ -inch lumber right along on the ends of the frames for your section-holders to rest on; cover up your brood-frames with cloth or board, and you are ready for the bees. When the bees are ready for the sections, place six section-holders, holding four sections each, on the strip, over the center of the hive. Make the ends of your section-holders $\frac{1}{8}$ inch thick, and have tin separators nailed on each holder. You can make your section-holders with little legs on, so they can stand on the brood-frames and dispense with the sticks. I use them both ways, but can't tell which is the better.

When the bees have commenced nicely in these sections, move them to one side of the hive and finish covering the hive with sections.

When the bees have accepted this room, and are pulling the foundation in the last sections, take six of them and place on the other six. You will now have two tiers of sections in all stages of progress, on half of the hive. Now fill the other half with sections. You now have $96\frac{1}{8}$ -inch sections on the hive, and have them away above the hive. Now make a rim of $\frac{1}{8}$ lumber, with a lath belt around, to set on the top of the hive. Better use ten-inch lumber, because, if the season is good, we shall need more room. When you come to add the third tier of sections you need take only one or two section-holders from the second tier that the

bees have commenced in, and put them in the third tier; then fill in with empty sections the second tier, where you removed these. You see you can build this hive up as high as you like, and add as much section room as is needed. Last season I built one up to the fifth tier of sections. I use flat metal covers for these hives, and set the hives tipping a little toward the front.

Now, what difficulties have I overcome? In the first place, I have done away with queen-excluding honey-boards by making the hives satisfactory to the bees. I have never had a queen enter the sections. I have no use for bee-escapes, as the bees are nearly all shaken off when the honey is removed from the hive. I can take the honey as soon as it is done—one section or a hundred as the case may be—before it becomes travel-stained. I have no warping of covers or shrinking of cases or supers to let the light in, so the honey is properly finished, and, consequently, a larger per cent of No. 1 or fancy honey is secured than by any other system I know of. Swarming is entirely overcome, if proper management is given to the brood-nest the early part of the season; but if they are let alone, packing left on top, they swarm earlier than those in eight-frame hives, as they are always stronger earlier in the spring—in fact, all the season.

Breckenridge, Mich., Apr. 19.

[The following is a private note sent along with the article. It contains a valuable point; viz., that a young lady is going to manage an apiary of Jumbo hives.]

Please ask questions, and I will answer them the best I can; but I labor under very many difficulties. I am nearly blind; have not been able to see to read or write for seven years, and am used up by that dreadful disease rheumatism. My eighteen-year-old daughter is doing this writing for me. She is to take charge of an out-yard of fifty or more Jumbo hives this season. You see, when they are once located the lifting is light; but I intend to use section-holders that will hold twelve $1\frac{1}{2}$ -inch sections on these, as I believe they have some advantage over those I have used. There are many valuable points I have not mentioned, but I think I have said enough—perhaps too much.

IN FAVOR OF LARGE HIVES.

“ONE - FOURTH MORE BEES,” “FIVE TO SIX FOURTHS MORE HONEY.”

By John Slaubaugh.

Mr. Root:—I am not ready yet to send a postal, telling you that I am tired of the discussion of an eight or ten frame brood-nest; but I am ready to send my experience. I can speak for my own locality only, my kind of honey, and my way of wintering bees. When the eight-frame brood-nest question came up first, I made

my hives the same as I had made them before—a ten-frame Langstroth, with a division-board to contract to eight or nine frames, as I used to. In case the eight-frame would not answer my purpose, I could take out the division-board and go back to the ten-frame brood-nest. After a four-years' trial, eight, nine, and ten frame brood-nest side by side fully convinced me that, for my locality, my way of wintering, and the kind of honey produced, the ten-frame is more profitable than either eight or nine. First, the less the brood-nest, the more inclined to swarm. There is, indisputably, more room for a big force of workers in a ten-frame than can be crowded into an eight-frame hive. It is said the two outside combs in the ten-frame hive are not filled with brood, nor is the old honey always used up by the colony. True, it is not always used up when spring comes. Those left-over stores are a safeguard in case of scarcity; and we all know that, if they are not all used up, there will be room in the brood-nest for a fourth more bees than in an eight-frame hive. I contend we can keep the bees with the one-fourth more bees just as long in the ten-frame hive, without swarming, as we can the bees with the one-fourth less in the eight-frame hive. The one-fourth more bees will give us from five to six fourths more honey. □

It might be said this is theory and not fact. Well, I hived two swarms together the 23d of June, 1894, into a ten-frame hive. They filled the ten frames, and completed me 143 lbs. of section honey, while other ordinary swarms completed only about 56 sections. We want the biggest force of bees to gather the most honey. The eight-frame will not hold as large a force of bees as the ten-frame. If some of our colonies should seem to be rather too small for a ten-frame, why, use a division-board; that will be cheaper and much less trouble than one hive-body upon another.

My next point is for my locality. I use the double-walled hive, wintering my bees on their summer stands, not having to carry my ten-frame hives in and out of the cellar.

My third point is, I am running my apiary principally for comb honey, having the $1\frac{1}{2}$ -story and the two-story chaff hives with two supers.

As I make my own hives, I will make a twelve-frame one for trial this summer. If we here can keep bees from swarming, we can expect honey. Although this is not an extra good locality for honey, yet I have handled bees for from 25 to 30 years. I have never known bees here that would not always gather sufficient for winter stores, with the exception of some late swarms. JOHN SLAUBAUGH.

Eglon, W. Va., Mar. 15.

[Perhaps before you go too far in the matter of enlargement you had better consider carefully the following:—ED.]

THE EIGHT-FRAME HIVE PREFERRED.

LOCALITY NOT A FACTOR IN THE MATTER; EXTRA-PROLIFIC QUEENS NOT NECESSARY; MORE BEES IN LARGE HIVES, BUT LESS HONEY, AND MORE BEES IN THE FALL AS CONSUMERS THAT HAVE TO BE FED; HOFFMAN FRAMES PREFERRED, AND WHY.

By C. Davenport.

As it seems some of the readers of GLEANINGS wish the discussion on large vs. small hives continued, perhaps you will allow me to say a few words on the subject. I prefer the eight-frame size; but I am a specialist—that is, I make a living, such as it is, by producing honey; and from quite a large and extensive experience I know I can make more money with a large number of frames in eight-frame hives than I can with the same number in ten or twelve frame hives. But in order to do so it is necessary to feed some seasons in order to keep brood-rearing up. I employ a man for each yard the entire season. These are cheap men; that is, one of them who has been with me for a number of seasons is a man who has one wooden leg; another is a man who is not able to do a hard day's work. But they can feed bees all right. I believe the majority of bee-keepers, though, keep bees as a side issue only, and many of these do not wish or have not time to do much feeding in the spring and early summer, if necessary. For this class, as a general thing, I think the ten-frame hive the best; for the honey those two extra combs will contain, will, in a poor season, enable brood-rearing to be kept up much better than it would be with only eight. If no feeding were done, and if a flow did come, the colony on ten frames would have a much larger force of workers to secure it; but when I have gone beyond ten frames, in general I have got just that much less surplus—that is, with a twelve-frame hive I do not get as much surplus within 14 or 16 lbs.; and, besides, such a hive costs more, and it is much harder work to handle them. I do not think the locality makes much difference to the specialist about the right size of hive. Of course, it might make a difference as to the time, and amount to be fed. I believe I can make more in any locality with frames in the eight-frame hive than I can with the same number of frames in larger ones; for my experience has been that, as a general thing, eight frames are enough for the best queens we can get at the present time. In saying "the best queens" I do not mean those that are the most prolific. I have had queens that would keep ten and in a few cases even twelve frames full of brood; but these queens needed to be prolific, for their bees were so short-lived that these colonies could not store as much surplus as others whose queens did not keep eight frames full.

Again, I have had very prolific queens whose bees lived long enough; but they were worthless so far as surplus honey was concerned, for

their entire time and attention seemed to be devoted to raising bees, and swarming.

Last season, a poor one in this locality, I had in the home yard a high-priced queen that I had bought the previous summer. She was in a ten-frame hive, and she needed ten frames, for she was very prolific. This colony did not swarm. They partly filled one super. There were perhaps 15 sections completed. An eight-frame hive stood right beside this one, the queen of which was a hybrid. I do not believe she laid an egg in either of the outside combs during the entire season; yet this colony filled 96 sections, and had plenty of stores for winter; and it is to-day one of the strongest colonies I have. Another colony, in an eight-frame hive, whose queen, a pure Italian, was also bought the previous summer, filled five supers of 24 sections each. There were a few in the last super that were not completed. They also had to be fed a little in the fall; but they are in good shape at this writing. This queen is hardly equal to eight frames; but I regard her as one of the most valuable ones that I ever owned.

Sometimes we see reports of queens that will keep twelve or even fourteen frames full of brood, and their bees store a large surplus. I have had two or three such queens; but they are very rare, and hard to get; and if we could get them, would they be any better? Suppose we had queens that would lay as much as two of the best ones we now have; could we get any more surplus for the same number of workers, or per frame, than we now do? I do not believe we could, from my experience. I believe that, after a colony gets to a certain strength—a strength with the right kind of queen—the eight-frame hive gives ample room to develop, and they will store as much or more for the same number of workers as one much larger; and I had much rather produce 200 lbs. of honey in two eight-frame hives than I would in one sixteen-frame hive.

Some of the advocates of large hives tell us that bees in such hives will raise a good many more bees during the latter part of the season, and thus have more bees for winter; and that, such being the case, they will winter better and build up faster in the spring. I will admit that colonies in large hives of twelve or fourteen frames will raise more bees at a time when there is nothing for them to do. This is why colonies in big hives do not store as much surplus. It takes a good deal of honey to raise and keep these extra bees over winter—enough so that, in large apiaries, it would amount to \$100 or more; and with me they generally die off in the spring before they have done much if any good. But I winter in cellars altogether. In outdoor wintering it may be quite different, and the same may be true of deep frames. I have better success in wintering with bees on the standard frames than I do on those that are deeper.

The past winter was, for certain reasons, very hard on bees in this locality, whether they were in cellars or outdoors; and at present some of the strongest colonies that I have are in eight-frame Dovetailed hives; and I have colonies in hives of many shapes, styles, and sizes—many more than I shall next year, if the present season proves a good one.

There has been considerable comment in the past year or two in regard to the best style of frame. I use and prefer the Hoffman. It is not perfect, by any means; but I have tried in a small way nearly every thing in the shape of a frame that has been offered in the last few years, and for the rapid handling of bees the Hoffman is ahead of any thing I have tried yet. Still, there are many who do not like them. In talking with a bee-keeper last winter he said he considered them a great nuisance, as it was so much work to dig the first one out. He was using the ten-frame hive, and there was no room in it for a follower-board. I do not use the Hoffman in ten-frame hives, but I can well understand that, without the extra space and follower-board, as there is in the eight-frame hive, they would be a nuisance. In my opinion the ten-frame hive should be made wider, and the extra space in the supers could be filled with a board. But you have made an improvement in narrowing the ends of the top-bars, and in having the metal rabbets project up behind the ends of them. Most of those I have, the frames are the same width at the ends, and the metal rabbets do not come up back of them, and I have more trouble with propolis being stuck on and between the ends of them and the hive than I do on the V'd edges; but the way you are making them will, I think, nearly if not quite overcome this; still, the way mine are, I can handle them much faster than I can loose hanging frames, or frames that are hung on metal rabbets and spacers combined; for with the latter we have not the lateral motion so necessary for the rapid handling of frames. The former have it, but you can not use it with two or more frames combined, as you can the Hoffman, on account of smashing bees, and occasionally a queen also.

Southern, Minn., May 6.

[This I consider to be one of the strongest and best articles we have ever received, and I think most of our readers, after perusing this carefully, will be convinced that the eight-frame hive is and should be kept the standard. Mr. Davenport is a very large and extensive bee-keeper, and his statements can be taken as in some degree authoritative.

Regarding the Hoffman frames. I might say that the article on that subject in the editorials was written before the above came to hand. But it can be seen how nearly Mr. Davenport agrees with what I have said regarding the rapidity with which Hoffman frames may be handled. It is indeed true, that, to handle such frames properly, it is necessary to have a removable follower-board. The ten-frame hive ought to have been a little wider; but as it was standard in width as we send it out, we could

not very well change it; and we did not at the time, and do not now, think that such size of hive will ever be universally adopted.

I believe we have the Hoffman frame down now where it will not have to be changed or improved. The narrowing-up of the ends, while it facilitates the handling of the frames themselves, does away with a great deal of the propolis attachment at the ends. I find that, as friend Davenport says, the Hoffmans are held more by propolis attachments at the ends than by the uprights along the V edges; but having narrowed up this end, that sticking propensity is reduced to a minimum.

It is true, the Hoffman frames are not perfect, but neither is any other good thing perfect; but I believe it comes the nearest to filling the bill for a general all-around brood-frame; and the great beauty of it is, it is everybody's property. All can make and use it.—ED.]

HOW THE BEES WINTERED AT DR. MILLER'S.

THE NECESSITY OF A BEE-FLIGHT BEFORE PUTTING INTO THE CELLAR.

By Emma Wilson.

Last fall the exceedingly good weather during the month of October fooled us into leaving our bees at the out-apiaries so long that we were caught napping at last. The weather suddenly turned very cold, and the bees did not have an opportunity for a good fly before they were put into the cellar. October 31st the first two loads from the Wilson apiary were brought home. Nov. 1st all were brought home from the Hastings apiary. Nov. 2d being a warm day, all these bees had a tolerably good fly. The last two loads of bees were brought home from the Wilson apiary Nov. 3d. Nov. 5th these last bees were flying, with the thermometer at 40°, while the other bees remained quiet in their hives. Nov. 20th the bees were put into the cellar. They had been through two very hard freezes, with the thermometer at 7 to 10° above zero, with 2½ inches of snow on the ground. We disliked putting them into the cellar without a good fly, but did not dare to leave them out any longer. If we could have foreseen the future it would have been better to leave them out until Dec. 21st, as that was a nice warm day. And it would have paid us well if we had carried them out for a fly on that day and then carried them back again.

About Jan. 10th the house cellar commenced to smell bad, and two of the strongest colonies were pretty badly daubed.

March 18th was a nice day; and as many of the colonies were in such bad condition we concluded to take them out for a fly, even if we had to carry them all back again. There were 110 colonies put into the house cellar. Of these, 94 came out alive and 16 were dead, and 21 more colonies have died since taking out. The house cellar contained the Wilson and Hastings bees. All of the Hastings bees came out alive, and 100 per cent of them are alive at the time of writing. Those that died from the Wilson apiary,

as nearly as we can make out, were all from the two loads that were hauled last. In the Wilson apiary the colonies were much heavier and stronger than either of the others, it being the one apiary that required little feeding for winter. Now, what caused the mortality? It seems a very plain case that it was the failure to have a good fly after being hauled, for that was the only difference between those two loads of bees and the rest, as they were wintered in the same cellar under exactly the same conditions. I guess we won't be caught napping again. No bees of ours will be likely to be hauled as late as November hereafter.

April 4th we carried the bees out of the shop cellar. They belong to the home apiary. They were in fine condition when taken out, and to all appearances could have remained some time longer in the cellar, without injury. Of the 89 colonies put into the cellar, two died.

Marengo, Ill.

[I take it that your bees wintered perfectly, with the exception noted. I should not have supposed that the lack of a good flight just after being hauled home, and before putting them into the cellar, would have made all this difference.—ED.]

CALIFORNIA ECHOES.

By Rambler.

Many standard appliances used in the East are in but little use here. The bee-tent is a valuable adjunct to the apiary, but we seldom find one in California.

Messrs. Gemmel and Alpaugh, of Canada, made a host of friends while here. We should like to annex them to California. It would lengthen their days of usefulness, and give us two more live bee-keepers.

In the last *A. B. J.*, Mr. Dadant thinks the new forage-plant, sacaline, is a honey-producing plant. If it proves true, it means much for California, for just now there is much talk about introducing it into Southern California; and if New Mexico can grow sainfoin, California surely can. Every bee-keeper who has a spot of ground upon which to test these plants should sow the seeds this year.

The Hon. J. M. Hambaugh, of Illinois, sojourned for several weeks in California; and in summing up his observations in a recent issue of the *American Bee Journal* he said, "The half has never been told." When you consider that several persons have attempted to throw doubt upon the statements of such writers as Prof. Cook, Dr. Gallup, and the Rambler, the above from Bro. Hambaugh is truly helpful. We have said much about California; but, remember "the half has never been told."

There is much said recently in the *American Bee Journal* about the practice of spreading brood in the spring, the majority taking ground against it. It is very safe advice when

applied to the bee-keeper in the cold corners of the East; but here in California the spreading of brood can be indulged in with but little danger to the colony, and it is largely practiced here in the spring. It is safe to say that all of the leading bee-keepers do thus enlarge the brood-nest, and equalize until the honey-harvest commences. It pays in dollars.

Please allow me to return thanks to the "Ladye Faire" who sent me that "confusion" of poetry. I am looking with much favor upon the fair sex just now, and am poetically disposed; and, being a lonely bachelor, I have been in a deep study over the following for some time:

"Fact is," said the one bee-man, "I married because I was lonely as much as for any other reason. To put it tersely, I married for sympathy."

"Well," said the other bee-man, "you have mine."

Eastern people come to California for various reasons—some for their health, some to engage in fruit culture, some to produce honey, and some to fill in the various other industries. Nearly all of these classes do well. They very sensibly consider that this is a new country, and it requires time for development, and they will endure a little hardship at first, in order to reap the advantages later; and, speaking of bee-keepers, there are hundreds of them who have made money out of the business, and thousands more will do the same.

There is a class of people, however, who arrive here from the East, expecting that every breeze is balmy, every sunbeam evenly balanced between heat and cold, and that golden nuggets are found in every sandhill. Owing to the fact that we do have disagreeable climatic features, and sometimes a failure in crops, precious little loose gold, and now and then a real bad real-estate man, this class of enlarged expectancy soon shake the dust of California from their feet, and seek the East, howling their grievances to high Heaven. We look around us and expect to see the whole of the State sink; but, no; she still waves; and the evidences of prosperity—growing towns, thriving communities—lead us to look with pity and a derisive smile upon the rantings of the mistaken emigrants.

Moral.—If you are doing well where you are, are respected, healthy, and passably contented, by all means stay there. If you have poor health, and \$1000 or more to invest you will do well to come to California. If you are along in years, remember what Dr. Gallup says: "California is the old man's paradise." My advice at all times is, to look well before you leap.

Mr. Gee and myself find the progeny of the queens we got first from you to be far better honey-gatherers than the other bees we have had. Mr. Gee has four strains (New South Wales bred), but he gives the palm to yours, both last year and this.

Minto, N. S. W., Aus., Dec. 24, 1894. P. D. PAGE.

WAX.

THE QUALITIES AND SOURCE OF WAX.

By *Karl Rudolph Mathey.*

Beeswax is a substance which is produced the world over by the various members of the *Apidae* (bee) family. Opinions vary greatly as to whether bees obtain it from the different kinds of sap which they find on certain flowers which serve them as food, or whether the pollen of such plants furnishes the requisite material. Wax itself may be considered either as a secretion or as a separate product; for when bees are quiet in their hives the wax may be seen in the form of minute scales, exuding from between the little rings of their abdomen. The worker bees either take these scales up from the bottom of the hive or else they receive them directly from the bees and form cells therewith.

Many bees are kept in European countries—Austria, Germany, France, Russia, Spain, Italy, and Turkey; and these countries furnish the main part of European beeswax. And, too, the Orient, especially Persia and Asiatic Turkey, furnishes considerable amounts, to which may be added the yield from the East Indies, Japan, China, Africa, and America, though not all the wax from these countries is designed for European consumption. German wax comes from North Germany, from the heathy regions of the lower Elbe, from Hanover, Holstein, East Friesland, etc. In Middle Germany it is more particularly from Thuringia (a part of Saxony) that much good wax is produced; Bavaria, especially Little Franken; then Wurtemberg and Baden have, by careful bee culture, produced a superior wax. German wax forms no article of commerce, as it is used mostly in home consumption. Austrian wax, Bohemian, Moravian, Silesian, and that from Bukovina and Poland, are ranked as among the best kinds. The wax of Bohemia, Moravia, Silesia, and Galicia, is among the softest. Recently two kinds have been noted—the West Galician, having a strong odor of fir-tree resin, and that from East Galicia (Bukovina), varying in color from red to brownish-yellow. It has a fine odor and considerable firmness. As buckwheat is a prominent plant for bee-pasturage in these regions, the wax produced therein is of the best, as is the case in all districts where this cereal is grown in sufficient quantities.

Hungary and its surrounding country produce much wax; also the region around Fünfkirchen, and especially Banat, with its rich fields. Siebenbergen sends much wax to the Buda-Pest market, and finds there in all cases willing buyers. Illyria (Carniola) and the Tyrol, and the country around Klagenfurt, furnish wax at all times, against which the Russian wax offers no competition, on account of the unsightly shape in which the latter comes. The best kind of wax known is the Bosnian—even better than

the Turkish. But it is the dearest, and the reddest in color.

All countries which use much sweet (and that is especially the case with Turkey) make much use of honey, and pursue bee-keeping with particular zeal and scrupulous care, and hence are in condition to offer to the world a wax of surpassing excellence in quality. Almost equal to the Turkish wax is that from Greece, whether it be from the mainland or from the numerous islands of that country. The French follow bee-keeping with the greatest assiduity. Brittany and southern France furnish the best wax. Burgundy, Landes, Normandy, and the regions around Bordeaux, produce inferior kinds of wax; but it does not appear on the market, as it is all used at home, and considerable quantities are even imported. In Paris there are several large firms that deal in honey and wax exclusively; and large wax-bleaching establishments, with hundreds of workmen, are engaged in this business. Spanish wax, in blocks weighing two or three pounds, is but little sought after in comparison with the French. Apiculture in Spain is in a rather primitive condition. Italy produces, in Sardinia, Lombardy, and Venice, considerable quantities of wax, and exports some, notwithstanding the great amounts used at home.

Wax, as produced by the bees and worked into comb, is snow-white; but that which comes from the hive, separated from the honey, has, on the other hand, a yellowish cast, varying in intensity. It is generally furbished in level cellular honey-combs by bee-men, from white to dark yellow, or now and then even a grayish yellow. It has a granular and generally shelly appearance where broken, showing a crystalline structure. At a low temperature it is brittle; but the warmth of the hand renders it soft and yielding, in which condition it can be kneaded. It has a slightly spicy taste, and does not stick to the teeth when chewed. In water or cold spirits it is not soluble; but in boiling alcohol it dissolves readily. On cooling, however, most of it returns to its original condition, so but little of it remains in solution. Sulphuric acid, ether, benzine, and spirits of turpentine, as well as most of the etheric oils, dissolve it completely. It admits of combination with most fats and fatty oils, in all proportions, by melting.

The specific gravity of pure beeswax is from .965 to .972. Its melting-point lies between 143 and 145°, and it becomes hard again at about 136°. If a higher temperature be applied, the wax is entirely decomposed, and vaporizes, but leaves no perceptible acrolin odor.

The coloring-matter in wax bleaches best in full sunlight. Bleached wax is found on the market in round, thin, translucent sheets. It has a mildly rancid smell, no taste, and melts between 147 and 152°, having a specific gravity ranging from .970 to .976, but preserves in other respects the original properties of yellow wax.

RAMBLE 132.

BEE-KEEPING IN LAKEPORT.

By *Rambler.*

When we pulled out again from our camp the added factors to our cavalcade attracted much attention. The people who were lounging around the springs cast curious glances at us as we rolled out of sight through the dust. Susan B. formed a cordial attachment to our ponies; and whenever we would get beyond her vision her shrill neighing reverberated up the mountain sides. No, Susan B. was not wind-broken, even if she was old and some of her teeth loose.

We traverse Cobb's Valley, and meet many new features on the way. This valley seems to have several fine ranches which were evidently a sufficient support, without living off the tourist; but we discovered that the tourist was the legitimate prey of even the ranchers. Here in the pretty shady Glenwood we had to pay 20 cents per loaf for bread. The postmistress of the nook was real pretty and sociable, and was fully as well posted in relation to roads and distances as the village blacksmith; and while she sold us stamps and bread she gave us much valuable information. Bro. Pryal wanted to camp right there and then, at midday. Wilder and I would not listen to such a proposition, and, cracking the whip, swung around the corner out of sight. Of course, Susan B. whinnied, pawed the earth, and whirled around; the postmistress stopped in the middle of a story, and fled to her little office. Susan B. pulled so hard on the bits that Pryal had to let 'er go. This little inkling of our friend's admiration of the fair sex gave us some fears that there would be disastrous results in the future, which, alas! did prove true.

Cobb's Valley was also noted for its delightful camping-grounds, running streams, and shady nooks. At the northern extremity a mountain 4000 feet in height, named Uncle Sam, beamed down upon us. Geologists tell us that Uncle Sam bears the proud distinction of being an extinct volcano. The evidences of volcanic action were visible in the rocks; for here was a whole mountain, not far from Uncle Sam, that appeared to be constructed wholly of black glass.

Our friend the blacksmith again gave us much valuable information. This blacksmith's impressions of California were peculiar. Southern California, he said, lived off the eastern tourist; said tourists are naturally stingy, and spend but little money; consequently the south end of the State is not prosperous. Northern California, on the other hand, depended upon the San Francisco and Oakland tourist, and they spent their money with reckless freedom; therefore this portion of California was the more prosperous. The people and the towns, however, belied his statements, for the song of

hard times was loud and long; and now and then a town was in the fatal stages of dilapidation. In Kelseyville were numerous vacant houses with broken doors, paneless windows, and shutters awry. Near this town we met a tourist leaving the country, and he held a very pronounced opinion in relation to the Swiss features, characterizing them as a delusion and a snare.

Hurrah! here is Lakeport, and this time the lake. Clear Lake is 28 miles in length, and 10 wide. Upon its shore we pitched our camp, tired and dusty. Several of those little gasoline-launches were puffing to and fro across the lake, giving quite a lively appearance to its placid surface.

Lakeport is quite a pretty town, with a fine climate. The lake seems to be naturally adapted to the breeding of billions of buffalo-gnats. In the evening, clouds of them surrounded our lantern and persisted upon going to roost in our tent; and in the town the space between windows and the screens was several inches deep



BITES

with dead gnats. The nuisance was, however, only during the evening. In the morning they retired to the tules that lined the shore. And what a beautiful picture our lake presented at sunrise! The air was filled with smoke from forest fires further north; and the sun, as it arose, appeared like a great red ball of fire. The lake, as smooth as a mirror, reflected the sun in a long blood-red pathway across the lake. The moon and its silvery pathway we had witnessed many times upon our lovely eastern lakes, and it has been likened unto angel-walks from earth to heaven; but this blood-red road suggested the pathway of demons from earth to some unknown sphere.

Before entering Lakeport, Mr. Pryal informed us that there must be a progressive bee-keeper in or near town, for one P. J. Moreley had purchased queens from him. Mr. Pryal took a turn into town after we had camped, and found his man. Mr. Moreley was the lead-

ing (and I am not sure but he was the only) harness-maker in town, and bee-keeping he conducted as a side issue.

Mr. M. came from that good but cold country, Sweden, and had been a resident of this country for only five years. He occupied a very pretty residence in the edge of the town, surrounded by trees and luxuriant foliage, and the bees were in neat dovetailed hives placed here and there under the trees; and, though some of the hives were only a few feet from the street, the bees were not troublesome to the neighbors. Mr. M. seems to be a thorough mechanic, and showed us a new kink in putting together the dovetailed hive. A piece of tin bent at right angles, long enough and wide enough to cover the ends of the dovetails, is securely nailed to the corners of the hive. There was no chance for sun and rain to get in their warping effects.

Upon the date of our visit, Aug. 30, the bees were working quite lively, and we were shown quite a number of sections in which the bees were storing a good quality of amber honey. We were also shown combs nicely drawn from foundation, and well filled with honey, which had been inserted in the hive on the 26th, or Sunday, five days previous to our examination.

When Mr. Morley first came to this country he used a hive that was in general use in Sweden. This hive was 18 inches deep, and contained 24 frames. The latter were 14 inches deep and 10 inches in length. From one of these hives he secured 900 lbs. of honey. Having no extractor he cut out the combs containing honey, on Sunday. By the next Sunday

flower, and was of a bad quality. Mr. M. finds a home market for his honey, selling his comb honey for 25 cts. per lb., and the extracted for 10 cts. Mr. Pryal was pleased to be introduced to a queen of his own breeding, and showing finely marked progeny. We were also introduced to some Carniolan stock from Mrs. Benton, and a strain of Italians from Lockhart's apiaries. Mr. Moreley had bred the Carniolans in Sweden, and had much experience with both races; and it was his opinion that, for business, the Italians were far superior to the Carniolans.

Mr. M.'s smoker was of that kind which causes some controversy and any amount of ugly comment. It has been described as follows:

"A little roll of tobacco-leaves with a fire at one end and a sucker at the other," or the cigar. Mr. M. had a polite way of wafting the smoke over the bees. They understood the plan, and were handled without gloves or veil.

Mr. Moreley would be a successful apiarist upon a larger scale; but the transforming of leather into horse-trappings seems to have the greater attraction, and in that business he seems to be successful.

Lakeport is some distance from railroad transportation; and this, with the dark grade of honey usually obtained, would probably deter the apiarist from making honey a specialty in this location.

Mr. M. kept abreast of the times by being a subscriber to *GLEANINGS* and the *Review*; and we had a very enjoyable visit with him.

We stopped a day in Lakeport, in order to allow Mr. Pryal's propensity to fish to have full play. His efforts piscatorial resulted in about as many bites as Wilder's *signs* of deer. I was pleased that my traveling-companions mounted such opposite hobbies; for when they did both mount the same hobby later on, ruin and devastation marked their pathway.

THE T SUPER, AND WHY THERE IS NOT A DEMAND FOR IT.

WHY SOME THINGS GO AND OTHERS NOT.

[I would explain to our readers that A. B. Anthony has made some suggestions regarding the T supers; but as Dr. C. C. Miller has had more experience along that line I forwarded them to him for reply. The doctor sent his reply to me, and I have in return again sent them on to friend Anthony. I have not space to give the whole of the discussion, but I give the "tail end" of it. Dr. Miller's comment on a previous letter of Mr. Anthony's appears first.]

If I understand Mr. Anthony correctly, he proposes to change the length of the brood-frame so as to accommodate more perfectly the super. Then he will have a super $\frac{3}{4}$ inch longer inside than four sections, and fill up that space with wedges at each end, or with a wedge and follower at one end. In actual practice I find no great difficulty in having a super shorter inside than the brood-chamber. He can tell



MORELEY'S SMOKER.

the bees had built new comb and filled it with honey; and the cutting-out process was performed again. The operation was continued through the entire season, with the above results. The honey was gathered from wild sun-

better after trying how he will like the proposed change, but I'm not sure there will be any real gain. If I am not mistaken, the main thing he is after is to have the sections crowded close together end to end, so there shall be no space between them. That, of course, is to avoid the crack for bee-glue. Now, there can be no advantage in that over the plan of having the little top separators crowded between the sections; for what difference can it make to a section whether it is crowded tight against another section or against another piece of wood? But it may be more satisfactory to him to put the matter to actual test.



At A is shown the close fit between two sections, and at B the top separator between. If they are crowded equally tight together, what chance is there for bee-glue in one case more than another?

C. C. MILLER.

Marenco, Ill.
[The following is the reply by Mr. Anthony. The experience that I have had personally with T supers inclines me to agree with Dr. M. rather than with Mr. A.]

Mr. Root:—Really I think the doctor must have been sleepy when he replied to the last article of mine. I did not mean we should change the length of the L. frame to accommodate the super. I only said, "Let us suppose our frame is 17 inches long." I did that hoping that E. R. Root would notice it as one point in favor of a shorter frame, as he had somewhat expressed himself as wanting to hear from me on the subject of hives, and because my own brood-frame is just that long.

I think if any one would try to find the cause for the $4\frac{1}{2} \times 4\frac{1}{2}$ section coming so largely into use, the first and principal reason would be on account of the length of the L. frame. The doctor says there can be no advantage over having little top separators between sections, and that there would be no difference between a section crowded against a section, or one section against another piece of wood. He forgot that we were making the super suitable for open-side as well as closed sections. Separator stuff closed the opening along the top of sections; but with the open-side sections there will be all that space under the separator stuff and over the T tins to be filled with propolis.

Mr. Root thinks that the T super is so little used now that the subject might as well be dropped. I am sorry that he thinks so. Almost all living kind seems to have its leader or authority to look to, and it is right. It is in E. R. Root's hands that most of the responsibility lies as to what shall be adopted by the bee-keepers of the United States. But very few people are capable of making the wisest choice as to what is best for them to use; and some of

the few who are, prefer to use what the rest do, so as to be in good company. It only wants Mr. Root's sanction, and in three years it will be all the go. If Mr. Root would only give the matter a little close attention, and call others' attention to it. I think they would realize the value of its simplicity, its cheapness, and adaptability to the different widths of sections that people want.

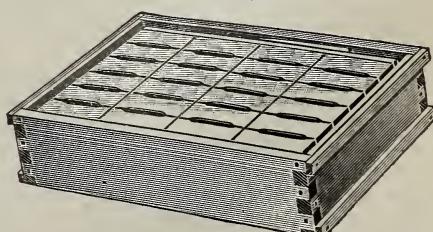
If formed as I have advocated, I am sure they could put in and take out sections quicker and easier than in other supers of this day. The one great necessity is to have one and the same thing fill the wants of all. I have seen the time when I was out of sections, and could have bought of a neighbor bee-keeper; but his width of sections would not fit my supers. Also the time when I could have accommodated my neighbors had it not been for the same difficulty.

Looking around us at other things, we see that the wheels of all vehicles run in the same rut; all locomotives on the same track; all axes fit the same handle; all kettles fit the different stoves; plows turn the same furrow, and machine after machine goes the same round in the field. Progress must have its way; and to look in the same line down to this very year we find the Columbia bicycle folks coming out with a pump-and-valve attachment that fits other wheels and what is coming to be the standard. And so should bee-fixtures have the same combined fitness that is found in other things in these more modern days.

A. B. ANTHONY.

Coleta, Ill., April 17.

[Now, friend A., you intimate that whatever I push will surely "go." I plead guilty to having started the use of some new implements; but these are implements of real merit. I have tried to push some other things that did not go that I thought had real merit. I think the Pratt automatic hiver, for instance, under certain circumstances, might prove a valuable assistant in the apiary, and it did indeed do well for us. I pushed it in the catalog and in the journal; but it did not go at all. And, again, inasmuch as yourself, Dr. Miller, and some others, think the T super should not be crowded out of sight, we have put in our catalog a better illustration, and improved it so it can be used on the Dovetailed hive, and yet take $4\frac{1}{4}$ sections. Here is the cut.



By cleaving the ends, shorter frames are unnecessary; so also are handholes. Well, although we have given it more prominence, and improved it so that it leaves nothing to be de-

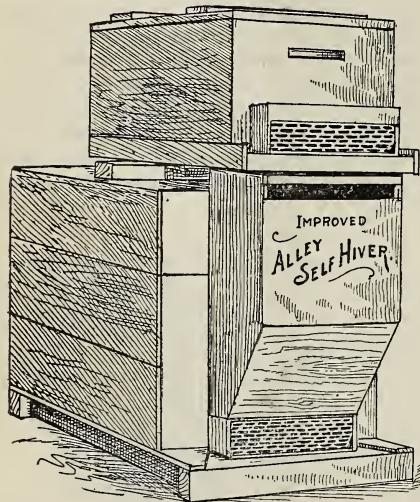
sired, it doesn't go, and I doubt if it would were we to say it was "just as good."—ED.]



COMBINATION QUEEN-AND-DRONE TRAP AND SWARM-CATCHER.

By Henry Alley.

There is a demand by a large number of bee-keepers for a simple, practical, and cheap device for either hiving or catching a swarm of bees when it issues. A practical self-hiving arrangement has not as yet been devised, as experiments the past few years have demonstrated. I think the device here described, for catching a swarm of bees, will prove not only practical, but will prove satisfactory to all who try them. The arrangement is simple in construction, inexpensive, and, though not a self-hiver—that is, the bees are not hived in the



hive they are to occupy as a permanent home—yet the swarm is caught and hived till they can be placed in a hive or otherwise disposed of as the apiarist desires.

The swarm-catcher is used in connection with the Alley queen-and-drone trap, and can be used on almost any style of hive, and fastened thereto with little or no trouble. Some of the advantages of this device are, that the apiarist can go from home one or more days at a time, and rest assured that, should his bees swarm during his absence, they can not decamp, and they surely would be found in the catcher—a fact one can know by a mere glance at the catcher and without an extended examination

either. In case a swarm is found in the catcher, it will require not over one minute's time to transfer the bees to a hive.

Although the catcher is used in connection with the queen-trap, the trap will not have to be altered in the least to connect it with the catcher. When the catcher is not needed for catching swarms it can be removed, while the trap can remain in position to trap drones or a queen as the case may be.

This arrangement in no way interferes with the bees while they are at work, and would hardly be noticed by them, even when first put on the hive.

This arrangement can be used as a self-hiver if any one so desires. All that is needed is to place a hive of combs over the catcher, as seen in the cut, or frames having starters in them, connecting the catcher and hive by an opening direct up through the top of the catcher and bottom of hive. In my opinion this arrangement would come nearer a practical hiver than any device yet described in the various bee-publications.

And now, friend Root, one word about the improved queen-and-drone trap. Those who have not used the improved trap know but little about what a perfect queen-trap is. Unlike the old-style trap, the new one has metal in the back side as well as on the front. The bees while at work can pass in or out through any part of the trap. There is no such thing as killing bees by being caught in the trap. Unless care was taken in placing the old-style trap on the hive, a colony of bees would be smothered. Not so with the new style, as there is no way the entrance to the hive can be closed by the trap, and the bees can pass up the back side of the trap, and pass out or in. The trap as now arranged does not prevent free ventilation of the hive during the hottest weather. But in some cases where there were very large colonies the old-style trap did not admit of sufficient ventilation.

Wenham, Mass.

[Perhaps the readers will understand the swarm catcher a little better when I say that the device is simply an ordinary Alley trap, the upper compartment of which has been enlarged to take a large swarm, and hold it for a day or two till the apiarist can give it his special attention. The hive on top, with the Alley trap, as shown in the cut, is not necessary when the device below is used simply as a *swarm-catcher*, but only when used as a *self-hiver*. I have no doubt the arrangement will work as Mr. Alley says.—ED.]

GOLDEN'S BEE-FEEDER.

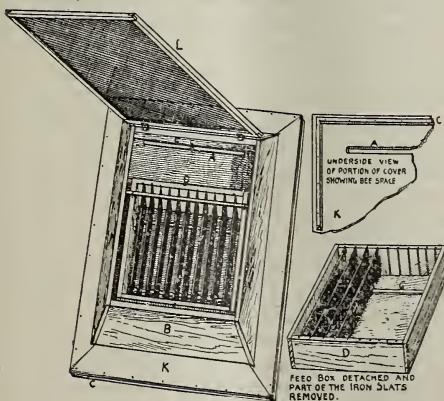
By J. A. Golden.

Mr. Root:—Having shipped you one of my combined hive-covers and bee-feeding arrangements, specially named bee-feeder, permit me to give you a short description of the device and

its advantages over any other, so far as my experience goes. In doing this I do not wish to be understood as having any new-fangled dish or pan to hold the syrup, more than any open-top vessel.

The special features of my invention, then, are, first, a brood-frame cover provided with a bee-space over the top of the brood-frames, permitting the heat from each cluster to unite, as from one compact cluster, during cold weather; also, bees are not required to travel to the bottom or around the extreme ends of combs, to pass from one comb to another to feed; and as this cover is made of thin lumber, it admits of ample ventilation; thus sweat and moldy combs are overcome, which undoubtedly create disease, which so frequently occurs when oilcloth and other substances are placed in contact upon the frames.

Second, the cover is provided with a receptacle or box made permanently open, the cover having a wire-screen cover fastened by two small hinges. Upon the board, near one end, inside of this box, a slot $\frac{3}{8}$ x 6 inches is cut, permitting the bees to step from the brood-frames right into the receptacle, in which any open-top feeding-utensil is placed, and is always ready to receive feed, either for stimulating brood-rearing, cell-building, winter stores, or filling out unfinished sections at the close of the honey-flow, thus doing away with gathering up feeders, smoking the bees, lifting lids, pulling off oilcloths, exciting bees, often subjecting the young tender brood to a blast of cold air, the latter being detrimental, as every rational bee-keeper knows, and the tired apiarist is relieved from the arduous work required in the above, besides frequently preventing unwelcome visits from robber-bees.



I wish to say, before closing, that, when feeding extracted honey back to finish sections at the close of the honey-flow, have a bee-entrance at each end of the feed-receptacle box, and place a feed-dish between. Thus the bees will do the work in a shorter time, having ample

and shorter space to travel; and I also find, by thinning the honey somewhat, the bees can perform the work in a much shorter time; and after supers have been taken off, the covers are replaced upon the hives, and there remain.

Reinersville, O.



DRONES AND SWARMING.

Question.—I am told that bees never swarm unless there are drones in the hive. Now, will it keep my bees from swarming if drones and drone comb are kept out of the hive?

Answer.—There are a few bee-keepers who argue that, if all drones and drone comb are kept out of the hive it would be, to some extent, a preventive of swarming; but with me I have failed to see that this matter of drones has had any thing to do with the matter of swarming whatever; for I have several times had hybrid colonies in my apiary, from which I have taken all drone combs, and not allowed them to rear drones, because I did not want my young queens to meet such drones; yet, so far as I could see, these colonies swarmed as promptly as did those having drones. I said, "from which I have taken all drone comb," and meant just this; but will explain that, to keep all drones out of a hive, means the opening of that hive every 20 days, and decapitating a few hundred drones in their cells; for where all drone comb is removed, drone-cells will be built in all sorts of out-of-the-way places, for I have yet to see the hive containing a populous colony during June and July that had not a few cells of drone comb in it; and I do not believe that these few cells can be kept out; for worker comb will be cut down and drone built in its place if a few cells can not be gotten otherwise. From my experience in the past I would say that it is not practical to try to keep all drone comb out of any hive, but, rather, have *just one* frame in each and every hive, having from six to twelve square inches of drone comb in it, and have such comb stand in a certain place in each hive, so that the apiarist may know just where it is; then every twenty days open the hives from which it is desired that no drones shall fly, and decapitate them, thus making a sure thing of the matter, and fully satisfying the bees. In this way you will not have a few drone-cells scattered all through the hive, nor will you have to use a drone-trap at the entrance to catch undesirable drones. If this comb with drone-cells is placed near the outside of the hive, and the drone comb is near the top-bar of the frame, you will not have to decapitate the drones more than three times during the season, for the queen will be slow in

depositing eggs in it; and when honey comes in, the bees will fill it with honey, thus keeping the queen from depositing eggs in it.

SULPHURING HONEY.

Question.—I see by GLEANINGS for April 15th that some have trouble in sulphuring honey on account of turning the combs and wood of the sections a yellowish green. How do you prevent this?

Answer.—This is one of the nice points, and one on which I did a good deal of experimenting in the past, after nearly ruining the first lot of comb honey I tried to sulphur; for at that time no one had given any caution regarding this matter. Honey should be stored in a small room where the temperature can be kept high, so that it can ripen out after the sections are taken from the hive. The sections should be stored on scantling, placed in such a way that the fumes from burning sulphur can pass between the sections all through the whole pile, if signs of the larvæ of the wax-moth are found. The right quantity to burn to kill the larvæ I found to be, after many trials, three-fourths of a pound to every 200 cubic feet contained in the room. Put some ashes in an iron kettle, and on the ashes a few live coals; pour the sulphur on, shove under the pile of honey, and close the door. Now leave for about fifteen minutes, when the door should be opened and the smoke let out. If too much is used, or the room left closed too long, we are sure to have the sections and combs discolored. Really the best plan is to have a window in this honey-room, so that when the door is shut, you can go to this window and watch the flies, which will collect on it as soon as the fumes from the burning sulphur begin to fill the room. One by one they will begin to be stupefied, and in from eight to twelve minutes the last one will have ceased to move. I used to wait two minutes after the last fly was lifeless, then open the door and window, so as to cause a draft and let the smoke out quick, and after thus working I never failed to kill the wax-moth larva, nor did I ever have any combs or sections colored. That you may not take in the fumes of sulphur yourself, the window should be made so it can be opened from the outside as well as the door. Some seem to think that a red-hot iron dropped in the sulphur gives better results than pouring the sulphur on the coals, as given above; but with me the coals do good work, and are always handy from the cook-stove, as we burn wood in the summer season.

“WHAT SHALL WE DO?”

Question.—Did you read what A. I. R. said under the above heading on page 328 of April 15th GLEANINGS? If so, is such doctrine sound?

Answer.—I do not know that the GLEANINGS friends will allow an answer to this question in this department; but as I believe that Bro. A. I. Root will sanction the “greatest good to the

greatest number,” I will venture a few words. The “good Book” says, “If any will not work, neither should he eat,” which coincides with Bro. Root’s “God surely helps those who help themselves.” Then Bro. R. is quite right in saying that “the world owes no man any thing until he has earned it;” but when he comes to advise us not to have any thing to do with bankers, manufacturers, etc., who show themselves greedy and dishonest, I fear he did not stop to fully take in our present situation. His father succeeded in doing what he tells us of “without any help from millionaires,” because there were no millionaires in this country at that time; for, prior to 1860, there was scarcely a millionaire in this country, and the legislation of this country at that time gave that father the privilege of keeping fully 95 cents out of every dollar of wealth which he produced from the land covered with woods which he occupied, to use for himself and his loved ones, while the wealth-producers of to-day in this country have to part with 52 cents out of every dollar’s worth of wealth they produce, to add to the millions of the few who force up prices by combines, trusts, corners, etc., of the necessities of life, that they may amass fortunes that no man can comprehend, out of the toil, sweat, and deprivations of the masses. Fifty-six of the actual necessities of life are controlled and cornered by trusts and monopolies; and yet Bro. Root says, “have nothing to do with them.” Abstain from beef, and punish the dressed-beef combine; abstain from bread, and punish the millers’ trust; from light, and punish the oil combine; from coal, and punish the coal combine. Is it possible to have nothing to do with these? According to the Chicago Tribune, the Standard Oil Co. cleared fully \$75,000,000 in ten days by the recent forcing-up of prices on oil, with not a farthing greater cost of production than before. The coal barons have lately met, and decided that the output of coal should be lessened, and the price advanced 50 cents per ton. The dressed-beef trust have doubled the prices of beef to the consumers in our eastern cities, while the producer of said beef, and the retailer, have to be content with nearly the same pay for the wealth produced by them as before. I can not think Bro. Root fully realized the import of what he wrote when he penned those sentences. “Turn the light a little lower, John, so we shall not burn so much oil, for oil has gone up in price, you know, and all we have to sell brings less. Use as little coal in building the morning fire as possible, John, for now it takes 50 lbs. of honey to buy a ton of coal, while in 1874 it took only 14. Let us economize all we can, for at best I almost fear we shall not be able to meet the rent this year.” Such was the conversation heard at a bee-keeper’s house one evening not long ago; and it only represents the condition of multitudes of hard-working people strug-

gling for an existence, while the few revel in wealth at their ease, said wealth being wrung from the masses by the legislation of the past. Did God ever intend that a few men, through unjust legislation, should enjoy the good things of this world while the many should suffer? Is it not about time we began to legislate for the masses instead of the classes?

[Friend D., I most heartily agree with the text you quote—"If any will not work, neither shall he eat." But you surely do not mean that every man must necessarily earn his bread entirely by *muscular* work. Quite a few of the readers of *GLEANINGS* buy potatoes in the fall, and hold them over till the spring, taking great pains to keep them in good condition in the hope of getting better prices. Now, whether they buy the potatoes in the fall, or raise them on their own farms, they are to a certain extent speculating on the chances of a scarcity in the spring. Whoever furnishes potatoes for seed must be more or less of a speculator: but may not his work be as honest as that of his neighbor who sells his potatoes as soon as they are dug? If the Standard Oil Co. did clear 75 millions of dollars, as you say, in ten days, it was a gigantic gambling operation; and the gambling mania of the present time is one of the most terrible evils that threaten us. You say my father kept 95 cts. out of every dollar, but that we to-day can keep only 52 cts. out of every dollar, etc. I believe I have read enough in regard to the matter you allude to, to understand it pretty well; and if I am correct there are only comparatively *few* people who agree with your statement. You suggest that the times are terribly hard for poor people. Suppose I should take the time and space to make out a list of the things that are cheaper for poor people than ever before. We should all consider that, when any thing gets to be very cheap, it is bad for the producer, but a blessing to those who have to buy. The farmer gets but a small price for his wheat. At least one consequence is, that every humble home can have bread cheaper than ever before. I would not abstain from beef; but I would buy it from my nearest neighbor who has beef to sell, and so with bread. If the miller is greedy and dishonest, I would have a little mill of my own. I have found these little mills in many homes during my travels; and they have proved to be a great economy and comfort. I never found any better bread, to my notion, than that made from home-made flour. There are men who produce both coal and oil who are not in any combine, and refuse to enter one. Can we not do something, at least, by way of encouraging them? You speak of "hard-working people struggling for an existence." All my life has been spent among hard-working people, and in many respects it seems to me they are having a pretty good time. Wages run from \$1.25 to \$1.50 per day, and almost every thing that a workingman has to buy is cheap and good. Of course, there are times and seasons when certain things are away up: but with the great variety around the most of us, can we not select things that are reasonable? I have no sympathy at all with the few who "revel in their great wealth, and live at their ease;" and may God forbid that our crop of millionaires should continue to increase.—A. I. R.]

A CORRECTION.

On p. 344 of last issue, second column, third line from the bottom, it reads "lessens the first cost of the brood-nest." It should be first *cost* (first time filling the combs).

H. R. BOARDMAN.



M. C. D., O.—I should judge from what you say in your letter that your bees are afflicted with what is known as dysentery. The only cure I know is fair and warm weather.

A. S. M., Pa.—It is evident from your letter that the bees you speak of as crawling about and having swollen bodies are affected with the disease known as bee-paralysis. I know of no satisfactory cure for the disease. Sometimes removing the queen seems to remove the trouble; but in many cases it does no good whatever. If you have very many other colonies, and these bees do not get any better, I would recommend destroying them entirely.

M. L. B., Ill.—We are now using a very much better arrangement—T supers or combined crates, in connection with a honey-board. Wide frames—that is, double-tier—are not used very much, owing to the fact that burr-combs, used with the old-style frames, are apt to hold them down to the frames, making it somewhat difficult to remove them. But wide frames will come out all right providing the modern brood-frames are used in the lower part of the hive.

J. M. E., Ala.—It would take a good many years for basswood or linden trees to yield honey—perhaps twenty. We set out a basswood orchard something over 20 years ago, and it is not yielding honey very satisfactorily even yet. The experiment is rather too expensive to engage in very extensively.—I can not explain to you why some colonies are so much more energetic than others unless it be that the bees come from a more energetic queen. If you have a good queen, some colonies will do better than others, of course.

W. R. B., Ind.—The ants are a serious pest in certain parts of the South, but do not do much damage in the North. I would suggest that you find the nest, stick a crowbar in it, and make a hole about a foot deep in the center of it. Pour into this about $\frac{1}{2}$ oz. of bisulphide of carbon. Tamp the hole tight, and you will have no further trouble from the ants. The bisulphide produces a gas, and kills them almost instantly, the gas permeating all the galleries of the nest.

B. D. C., N. H.—In our A B C of Bee Culture, under the heading of Poisonous Honey-plants, you will find the mountain laurel described as a poisonous honey-plant. I do not know that any deaths have ever occurred from it; but it certainly is not a honey to put upon the market if the report from Dr. Grammer is true, and I have no reason to doubt it, because his statement has been confirmed by others. Under the

circumstances, if you intend to go into bee-keeping extensively you had better locate somewhere else, for there is no doubt that the mountain laurel would yield well, and you might be able to sell the honey; but on the other hand you would be liable for heavy damages.

W. W., of N. Y., inquires how to feed bees in box hives. This can be done very nicely with the Gray entrance feeder shown on page 27 of the catalog we are sending you; or if you do not wish to go to that expense, use an ordinary common pan; pour in syrup made of sugar and water, about half and half, and spread over cheese-cloth. This should be put out in front of the entrance at night, because, if other bees are in the vicinity, it will cause robbing. The bees in the box hive will take the feed all in. Of course, such a plan of feeding would not answer in cold weather, but will do very well in late spring and summer.

J. O. S., Kan.—Yes, the comb in the super that was made last season will do to use this season; in fact, the bees will start in the sections a little sooner if there are a few of them containing a little drawn-out comb made the previous season. When a swarm issues with two queens, if you let them alone one of the queens will probably be disposed of; but if you can catch one of them you will be that much ahead, providing you have a place where you can use her in some other colony. The drones from a tested Italian queen are generally very dark, and to a beginner might appear to be black. You will find the Gault raspberry advertised extensively as formerly. I would refer you to our advertising columns and also to Special Notices.

H. B. H., Pa.—You say that the solution for imbedding wire in foundation in the battery that we send out does not seem to be strong enough, and you desire information. The solution as given in the directions will certainly give good results providing you follow very carefully what is said. After the solution has been in use an hour or so it may be necessary to strengthen it up a little by putting in more sulphuric acid. Put in enough until the battery gives the requisite power. Before you do this, make sure that all wire connections are perfectly clean. Otherwise you will fail to get satisfactory results. You say that you are experimenting with other chemicals. I do not think you will find any thing that will give you the strength of current that bichromate of potash and sulphuric acid combined in the proportions given in our little circular of directions do.

S. H. D., W. Va.—When bees are moved over a distance of three miles there is not the least danger of their returning to their old location. If I understand you, you expect to move them very much further than this. If you have an apiary of twenty-five or even fifty or one hun-

dred colonies I would advise you to have them sent by freight. When bees are moved much of a distance it is customary for some one to accompany them, going right along in the same car. No extra fare is charged for the person in attendance; but as your bees are going a much shorter distance than this, all that will be necessary will be to load them on the car and have some one receive them and unload them at destination. I take it that you are familiar with putting up bees so as to give them sufficient ventilation. There ought to be wire cloth on top and wire cloth at the entrance, and the frames should be fastened securely, of course, if not of the self-spacing type.



BEES REMOVING EGGS; THAT MISSING LINK.

Do bees remove eggs from worker cells and place them in queen-cells, and rear queens from them? Yes, they do. How do I know? I will tell you. Some years ago I found a colony in early spring that had become queenless—no eggs or young larvæ, and the bees vainly trying to raise a queen without these essentials. As the colony was small I took away all their combs but one, and then gave them two combs, making three in all, and shoved up a division-board so as to keep them warm. One of the combs given them was well filled with eggs and brood in all stages of development. The other comb contained some honey, and had been kept in an outbuilding during the winter. When sufficient time had elapsed for the bees to have sealed queen-cells from the young larvæ given them I opened the hive to see how many cells they had built. Imagine my surprise when I looked over the comb of brood given them, without finding any sign of building queen-cells or rearing a queen. I thought I would look farther, and lifted out the other combs, when I discovered, on the face of the comb that had been given, that had been wintered in a cold room, a single queen-cell well filled with royal jelly, and a larva in it not yet sealed, which was conclusive evidence to my mind that bees could not only move eggs from one cell to another, but that they could rear queens from them. This is the only instance in nearly thirty years' experience, and much of the time with hundreds of colonies of bees, that I can say positively I knew the bees had moved an egg, and used it for queen-rearing. From this experience I also learned that bees will do very differently at different times, or different colonies at the same time. Their instinct seems to vary in regard to many things, or they seem at times to be guided quite as much by impulse as instinct, which has led me to be somewhat skeptical as

to the value of non-swarming hives or non-swarming strains of queens, and devices that depend upon the bees doing every thing just as set down in the books. Indeed, there seem to be as many exceptions to their general rule of conduct or instinct as there are to the rules of English grammar.

J. E. CRANE.

Middlebury, Vt., Apr. 11.



EXTRA pages and an extra edition as usual.

RAMBLER writes that Southern California has started out for a big honey-flow, and that rains have been copious and timely. Extracting has been already commenced, and comb honey is being capped over.

A PAMPHLET, entitled "A New System of Management in Bee-keeping," by James Heddon, Dowagiac, Mich., has been received. Those who are interested in his system of bee-keeping can get the information by addressing the author as above.

I HAVE wondered whether it would be a bad idea to put in every issue a label on the "best article" in the judgment of the editor, as a sort of stimulus to the other correspondents. But then, there would be differences of opinion, and some would feel hurt, I fear.

WE have just received a note from C. P. Dadant, announcing the death of his mother, the estimable wife of Charles Dadant. She died on the morning of May 3, of a tumor of the liver. She was born in France, March 22, 1822, and was married to her surviving husband May 31, 1847, and came to this country in 1863. We feel sure that bee-keepers at large will unite with us in extending their sympathy to the bereaved husband and other members of the broken family circle.

THE editor of the *Progressive Bee-keeper*, while recognizing that good arguments are produced in favor of both the eight and ten frame hive, says that he himself prefers the ten-frame hive with a follower. "With such a hive," he says, "I can contract to six or enlarge to ten frames, to suit circumstances, by simply sliding the follower-board and putting in or taking out the frames. I use more hives with only eight frames in them than I do with more; yet if I were going to establish an apiary now, I would not buy eight-frame hives."

A BEAUTIFULLY illustrated and well-written article on bees appears in the May *Cosmopolitan*, by our old friend and co-worker W. Z.

Hutchinson. A common mistake of old writers on bees, when trying to instruct the general public, is to assume that that public knows more about bees than it really does. But friend Hutchinson has carefully covered the whole ground, and put it in such popular style that the reader is fascinated and interested at once. The photos from which the engravings are made are some of those prepared by Mr. Hutchinson some time ago, and which I have already referred to as being so accurate and clear. Copies of the *Cosmopolitan* containing this article can be obtained at the *Review* office at 20 cts., postpaid. The article is to be continued in the June number.

THE claim is sometimes made that a certain kind of hive will produce twice as much honey as another. Of course, this is not true. One *locality* may produce twice—yes, ten times as much honey as another. One *bee-keeper* in the same locality may, by the right management of his bee force at the right seasons of the year, produce twice as much honey as his neighbor who lets things take care of themselves. A certain peculiar construction of a hive may perhaps enable the intelligent bee-keeper himself to save half the labor. Construction may enable him, also, to secure a little more *marketable* honey, and perhaps a little more in the aggregate. The old statement, that bees will store as much honey in an old nail-keg as in the most improved hive, still stands practically uncontroverted. Improvement in the construction of hives looks, then, not to *more honey*, but to *less labor* in the getting of that honey.

ARE THOSE WHO LOSE IN WINTERING ALWAYS SLIPSHOD AND CARELESS?

IN our last issue, in summing up the statistical reports on wintering, after referring to the good showing, I said: "As was to be expected, inexperienced and slipshod bee-keepers did not winter as well as those who read bee-journals." A subscriber, who has taken the journal for a number of years, and has read bee-books, and is supposed to be up with the times, takes this as a personal insult, because, he says, he has lost heavily. I am surprised that he should construe the sentence quoted as implying that every bee-keeper, himself included, who lost heavily, was therefore necessarily slipshod and behind the times. A careful reading of the sentence would hardly bear out this construction. I did not say that everybody who lost was slipshod, but I did say that "inexperienced and slipshod bee-keepers did not winter as well," etc. In other words, the slipshod lost heavily because of their carelessness, unlike our correspondent, who lost *in spite* of his care. His mistake was like that of the man who concluded that, as all eagles are birds, therefore all birds are eagles; hence a lark, being a bird, is an eagle. I did not mean to take this much

space to reply to this; but as others may perhaps have felt hurt in the same way, it is only necessary to explain that I did not mean to insult anybody, but was simply striking at *carelessness*, and not at our old friends and patrons.

AT the last meeting of the North American, it will be remembered that Dr. C. C. Miller was appointed a committee of one to wait on the Western Classification Committee to see if he could secure some needed reduction in freight rates for bee-keepers and supply-dealers. May 8 last, this committee, assisted by Geo. W. York and Mr. Herman F. Moore, appeared before the railroaders, and were successful in securing one important reduction on honey in barrels, kegs, and cans. An interesting report by Mr. Moore will be given in our next.

MOISTURE IN CELLAR—DOES IT CAUSE DYSENTERY?

THE last *Review* at hand contains the conclusion of Experimenter Taylor's experiments in wintering. Among other things his object was to determine whether moisture in excess had any thing to do in causing dysentery. The results seem to show that it does not. Mr. T. seems inclined to believe that the disease is due rather to the food, and to the fact that the temperature is such that the bees are not able while in the cellar to pass out of the hive and void their feces. As between upward ventilation and sealed covers in the cellar, there is practically no difference in results. The temperature of the cellar where these experiments were tried was practically uniform, varying only from 43 to 45°.

THIN VENEER FOUNDATION.

A NEW firm, Schmidt & Thiele, New London, Wis., send us a sample of veneer foundation, and request our opinion on the same, in GLEANINGS. It is simply a thin sheet of wood, $\frac{1}{16}$ of an inch or less, covered with cell-walls of ordinary foundation. The object is to give truer combs, and combs that will not sag. We learn that Schmidt & Thiele are going to get out a patent on it. I do not like to discourage a worthy invention, but it will surely be a waste of money for them to invest in a patent to cover this idea, when it is already sixteen years old and over. Sixteen years ago, after having tried paper, cloth, and the like, as a background, with indifferent success, A. I. Root tried the wood; and this is the way he threw up his hat:

I have succeeded perfectly, with a board about $\frac{1}{8}$ inch in thickness; and the only difficulty now consists in getting these boards coated perfectly with wax, on which to make the foundation. For once in the world, we have combs perfectly even, and safe from sagging. You can scrape off the honey if you like, and let the bees build on more; but the boys complain that they can not cut out queen-cells from them.

That was published away back in August, 1879, on page 317 of GLEANINGS. Later on, a more elaborate description was given in our

A B C book; but, like a great many things that promised a great revolution, it died a natural death. In the first place, such foundation can not be made to compete in price with ordinary foundation; and while it prevented the sagging of cells, and made the most beautiful combs, bees would at times gnaw the wax off, leaving the thin veneer of wood; and at other times the veneer has a disagreeable habit of warping, pulling the combs out of true. But I presume that bee-keepers could have got along with this had it not been for the increased expense. While Schmidt & Thiele offer this at less per pound than ordinary foundation, it weighs proportionally a good deal more per square inch; and, after all, the present methods of wiring seem to do away with the disagreeable sagging, and at the same time stiffen the combs fully as much as the wood.

I very much dislike to throw cold water on Schmidt & Thiele's veneer foundation; but at the same time I believe I am doing them a greater kindness in showing them what has been done, and that a patent, even if secured, would be valueless in the face of printed matter like the above.

FOUL BROOD IN ENGLAND.

WE have just received a copy of the Report of the Committee on the Bee-keeping Industry and Foul Brood in the United Kingdom. It sets forth in a very thorough manner the possibilities in the line of apiculture in the British Isles were it not for the shadow flung on it all by foul brood (which seems to have its own way so far as the law is concerned), before which disease English bee-keepers seem to be powerless. The British Bee-keepers' Association is now trying to have apiculture recognized as an industry, and to have suitable legislation enacted to drive the fell disease from their shores. Our British brethren seem to be hampered in this direction more than we are here, and are more inclined to say, "What can't be cured must be endured." The American version in that case would be, "What can't be endured must be cured," and Canada has about done so. The mother-country is much behind Canada in this respect, where foul brood at present is likely to find its match.

The report was compiled under the supervision of Thos. Wm. Cowan, editor of the *British Bee Journal*, who gives us the following information:

The annual value of bee-keeping in England and Wales would probably reach \$750,000, aside from sale of bees. The annual yield of honey and wax in the same place approaches 4,000,000 lbs. More honey could be gathered if more bees were kept; not enough bees are kept; demand for honey increases with the supply; area of pasture land is increasing. Prosecutions for the sale of adulterated wax have improved the demand for pure wax. The use of

native honey is encouraged as a preference over foreign. The value of the bee as a fertilizer is beginning to be understood. In this respect the value of the bee is greater than the value of the honey and wax. Twenty times more bees than other insects visit the bloom, which is absolutely dependent on insects for pollination. In England and Wales there are 20 bee-keepers' associations, with 4104 members; number of hives, 260,000; average per hive, 17 lbs.; wax per hive, 4 ounces. Ireland produced 248,363 lbs. of honey and 3188 lbs. of wax, which is considered an underestimate. It is believed that Scotland exceeds this, but statistics can not be obtained.

A STUDY OF INSECTS.

A SCIENTIFIC treatise on this subject, and yet one adapted to the capacity of the average reader, is what the book named above purports to be. It has 700 pages, the size of this one. It is illustrated with 797 cuts, all engraved for this work by Anna B. Comstock, its assistant editor. These cuts were all made from the creature itself, and certainly leave nothing to be desired, and they are a monument to the skill of a woman's hand. Twenty-two orders of insects are described fully, while the total number is almost beyond count. All of the old bugs peculiar to this country (except hum—) are here seen, drawn with remarkable fidelity, especially the "tree-hoppers," which are certainly funny enough to suggest to the author the idea that Nature must have been in a joking mood when she created them. We can not think of an enemy of any of our garden and field crops which is not here described, with information as to their destruction. The subject of "Bee-moths" will be found to be very interesting to bee-keepers, as will also the bee itself, although the latter has had such special treatment by Cheshire, Cook, Cowan, and others as to leave this book in question entirely in the shade, as a matter of course. But it takes us into a world of wonders, and most of these "wonders" are at present the enemies if not the scourges of the agriculturist if not, indeed, of the human race. We know of no book which will better enable us to combat such foes; and to be forewarned is to be forearmed. The scientific names are so printed as to enable any one to pronounce them at sight. As to the author, his name is John Henry Comstock, Professor of Entomology in Cornell University and in the Leland Stanford Junior University; and after that is said, nothing more needs to be remarked in regard to the thorough manner in which the work has been done. The price is \$3.75; postage 34 cts. extra. Printed and published by the Comstock Publishing Co., Ithaca, N. Y., to whom all orders should be addressed.

The work has been adopted in twenty-six colleges as a text-book, and twenty of these are agricultural.

W. P. R.

HANDLING HIVES; THE METHODS OF DIAGNOSING WITHOUT HANDLING FRAMES, ETC.

I MAKE it a part of my business, assisted by a light-weight safety bicycle, to take entire charge of our out-yard. This I have done for the last three or four seasons. While I keep track pretty closely of our home yard, I do not do much work with it except to hive an occasional swarm on Sundays and other days when our regular man is not about. Early this spring, as soon as the roads were fit, I took a run down to our basswood apiary, peered under all the cushions, raised the sealed covers, and made an examination of each colony. I found that they had all wintered, whether under sealed covers or under absorbents, and that notwithstanding they were in a comparatively open field, with the exception of what protection the small basswood-trees afforded.

Again I went down a few days ago, and this time I gave them a very thorough examination. I took along a Crane smoker, a twenty-penny wire nail, and a silk-tulle veil. My object was to determine the amount of brood in each colony, the amount of stores, bees, etc. Now, I can not with my other work in the office afford to handle over every frame. After opening up the hive, with the wire nail I have just spoken of I removed the division-board, then ran the nail between the center pair of brood-frames, and pried them apart. This split the brood-nest perpendicularly in two equal parts, leaving a space of from $\frac{1}{2}$ to $\frac{3}{4}$ inch between them. In some cases I lifted out one frame, and in others I got satisfactory information by simply peering in between the frames. In the latter case, if not entirely satisfied as to the amount of stores I split the brood-nest in another part, and peered down between the frames as before. This usually gave me an idea of the amount of stores. After having satisfied myself as to the condition of the colony, I pried on the outside frame, crowded the whole set of frames together *en masse*, inserted the division-board, and closed the hive up. If there was any thing unusual, or something requiring attention, I laid a brick, or block of wood, on top of the hive.

If, in splitting the brood-nest perpendicularly in two equal parts, and looking down between the frames, I thought the brood looked a little irregular, or scanty in amount, I pulled out a frame to see whether there were eggs. If these were present, and the brood well capped over, and healthy-looking, I replaced the frame, crowded over the other four with one operation, and closed up the hive. I seldom if ever stop to hunt for the queen. If I see eggs I know that she is present in the hive, or at least she has been within a very short time. Eggs are supposed to be eggs for at least three days. But, supposing the queen was killed the day before I examined, I think I should be able to recognize her absence, even if I saw eggs, by

the howl of distress on the part of the bees. Old bee-keepers know what this "howl" or uneasy humming means. It does not *always* indicate queenlessness, it is true; but, with other conditions easily ascertained, it is not difficult to tell whether the hive is queenless, without even hardly handling a frame.

How the divisible brood-chamber can be handled any more rapidly than a good hive containing modern Hoffman frames with V edges, is past my comprehension. I have handled the former somewhat in our own apiary. That is to say, we have had a Heddon hive in our yard for a number of seasons; and I have manipulated that hive perhaps more than any other one hive in our yard. We have also had a Danzenbaker hive in our yard for a part of one season. I have seen divisible-brood-chamber hives handled by bee-keepers who were very enthusiastic over them; but, taking it all in all, I think I can get a more satisfactory knowledge with a given number of hives containing full-depth Hoffman frames in less time than from any equal number of horizontally divided brood-chamber hives I have ever seen or read of. I say I *think*. A positive assertion right here—and I refrain from making such a one—is but little short of rank egotism. Individual tastes, ways, and habits of working, will lead to a variety of opinions.

Mr. Heddon and Mr. Danzenbaker, of course, will both think their ways are better, and they certainly have a right to their opinions. Now, why do I like mine (or, more correctly, Hoffman's) better? A Hoffman-frame hive can be split *perpendicularly* in two parts. A divisible-brood-chamber can be split horizontally in two parts; but it will be apparent that such a split does not show brood *surface*—only the *edges* of the combs, and those very imperfectly. A *perpendicular* split does show the *whole surface* of two combs. Then if we remove one comb we have for examination the two surfaces of the one comb besides two surfaces of each of two other combs.

Although I have studied and experimented a good deal, I have never been able to diagnose accurately a colony merely by looking at the top and bottom edges of the combs; but if, for instance, I can see just one frame from the center of the brood-nest, or can see the two surfaces of two combs when a brood-nest is split as I have explained, I can judge—and so can every experienced bee-keeper—pretty accurately the amount of brood in those combs. To test myself, I have repeatedly, after forming an opinion, examined every frame, and I do not know that I have at any time found that I was mistaken in my first impression. Now, then, if it is a fact that the Hoffman-frame hive can be diagnosed as quickly—and I think more satisfactorily than by dividing the brood-nest the other way, horizontally—do we not, by having full-sized frames, gain some advantages? Bees,

according to my experience here, breed better in full-sized frames than in half-frames; and this experience of mine has been corroborated from what observations I could make, where horizontally divided brood-chambers were in use.

Last fall—or, rather, late last summer—we tried one Danzenbaker hive. I know one swallow does not make a summer; but in spite of all we could do, we could not get the bees by any kind of feeding to breed satisfactorily in the two chambers at once. The queen seemed determined to stay in one hive-section at a time; indeed, she would fill out the frames of one section full of brood; but go below or above she just wouldn't. The bees would put in pollen and honey, but there it stopped.

But with the Heddon hive we obtained very much more satisfactory results. Why? The Danzenbaker brood-frame uses thick and wide top-bars and bottom-bars, $1\frac{1}{2}$ wide by $\frac{3}{8}$ thick; but I have found that, between two sections of the Heddon, burr-combs will be built, and this to a great extent completes the two sets of brood-frames. But even this slight obstruction seemed to hinder somewhat the normal circles of brood, when compared with brood-frames solid without any obstructions between. I am, therefore, of the opinion that it would not do to have thick and wide top-bars for sectional brood-chambers; and that, if we are to have any thing of that sort, Mr. Heddon's decision for narrow and thin top and bottom bars is about right. But he has burr-combs, and these I won't have—even if a part of the nuisance is obviated by a slat honey-board. Mr. Danzenbaker, in the attempt to obviate these, has possibly run into a snag more serious yet in the use of wide bars.

About this time I imagine I hear Doolittle chuckling and saying, "There, didn't I tell you bees don't like to go past thick and wide top-bars?" Now, I am not taking any back track yet on this question. While I fear heavy bars between parts of the brood-chamber will not be satisfactory, I know they do not form any obstruction between brood-chamber proper and surplus—certainly far less obstruction than the old-style hive with thin top-bars, burr-combs, and slatted honey-boards; or, worse yet, burr-combs and no honey-boards, said burr-combs stuck fast to the bottom of the surplus.

I have endeavored to give you my honest impressions of what I believe to be true regarding these matters; but I was not quite willing to give expression to them just yet, because I desired to experiment and observe further along these lines. But now that the divisible-brood-chamber hive is being discussed, I think it is well that we look on the side that I have presented. I do not claim to be infallible in my opinions; and if I should change my mind it will be because truth, and an honest purpose to get out of ruts, will force me to do so.



Who then is that faithful and wise steward, whom his lord shall make ruler over his household?—LUKE 12:42.

In order to take the above little text in the sense I wish, let us first commence by supposing ourselves all to be servants to somebody, or servants to the great wide world, as you choose. In a measure I am *your* servant, dear friends, for you expect certain things of me. You have a right to expect them; and if I do not render these services to you faithfully, you have a right to complain. Come to think of it, I rather *like* to get letters taking me to task right in this line. Once in a while somebody says, "Look here, old friend; does this sound just like A. I. Root, or what we might expect of him?" Then follows an extract from some letter I have written when I may not have been exactly in the right frame of mind. Well, if we all recognize, then, that we are all *servants*, I am ready for my little talk to-day.

It is the first day of May, and, as usual, there is a general activity everywhere. Nobody is looking for a job; but a great many, on the contrary, are inquiring where they can get a man or boy to plant potatoes or make garden. Why, everybody is so busy here in Medina that Mrs. Root was telling me of a widow lady who got her garden spaded up and planted by a woman over *seventy years old*. She did it *tip-top* too. Of course, you know I rejoice in seeing everybody have something to do. Yesterday I met a man from the great oil regions of Findlay, O. He said that, since the recent advances in oil, new wells were being drilled, old ones were starting up, and the manufacturers of drilling-appliances were working day and night with all the help they could scrape up. During the past week we should have been running day and night, could efficient help have been obtained. As it was, we asked those who could bear the strain to put in twelve hours a day until we could get a little ahead of orders. Well, at such a time there is more than ever a demand for not only skilled laborers, but for those capable of taking charge of the unskilled, to see that they do their work right, and that mischief is not done. Above all things, we want *reliable* men. Of course, we can not demand that every man, woman, and child, be at their post invariably; but we do like to have notice, so that provision may be made for absences when it is *necessary* for hands to be away. But a great many people do not seem to have any conscience in vacating their posts.

The most serious annoyance comes where somebody stays away without a word of explanation. Perhaps he runs machinery. Three large boilers are now furnishing steam to do the work. Our big engine is crowded to its utmost capacity, and we have so many men in readiness to fill up any vacancy, and keep every thing moving, that, when they happen to be all well and on hand, it is sometimes a puzzle to find a place for them. Where a man is not running machinery, his absence without any notice throws things out of shape, and hinders those who are depending on him; but it is not quite like having a machine standing idle when somebody away off is urging us by letters and by telegram to hurry up the stuff which that machine is to make. Some people have a reputation for reliability. Oh how I do like that word *reliability*! It speaks of faith and

of hope; and I do not know but it speaks of charity too. What a comfort it is to have reliable people around you! A few days ago Mrs. Root paid me a compliment. Isn't that a strange thing to write about? What do you think it was? Why, she had been talking with somebody who had the blues, and would have it that every thing was "going to the dogs." I came in just afterward, and she said something like this:

"You do not know, dear husband, how thankful I am that you never get the blues. You are always hopeful, always full of life and energy."

Of course, she did not mean to say that I never get tired out. Well, I told her this morning that I wanted to pay *her* a compliment. The compliment was, that my wife had always been *reliable*. She never failed in any thing since I knew her, when it was a possible thing, not only in keeping her promises, but in coming up to what was expected of her. I do not believe I ever knew her to shirk, or play truant. And now if you will excuse me, that is enough of "my home" for the present.

Some years ago a young man worked for me who was a pretty good sort of fellow, but nothing remarkable that I know of in the way of reliability. When our neighbor across the way was short of an engineer, and asked if he could have John for a few days, I let the latter go; and as we were not rushed much at the time, John kept on in his new place. Years passed, and we had a revival in our town. John was one of the brightest new converts. His conversion extended clear to his fingers' ends—yes, and toes' too, I might say. Once or twice it seemed necessary, where he worked, to have some repairing done on their engine on Sunday, so as not to hinder work during the week. John objected. By and by things came around to where it seemed very desirable that we should get John back again, if his present employer could spare him. I went over and talked with my neighbor about it. He did not want to let John go. I was not much surprised; but during the conversation he made a remark something like this:

"The fact is, John is *mighty reliable*."

I could not help smiling. What an expression—"mighty reliable"! That is pretty strong language, friends, and it paid our friend John a very high compliment. My friend did not say so, but it seemed to be summed up something like this: "John has some peculiar notions, and it is sometimes quite inconvenient to have him refuse to help us when it is very desirable that a little bit of work should be done on Sunday; but notwithstanding all this, John is *mighty reliable*." Mind you, my neighbor did not say just the above, but I have sort o' paraphrased it so as to express about what I have reason to suppose he thought.

Now, my dear friend, has anybody ever said of you that *you* were "mighty reliable"? Why, that very fact gave John from fifty cents to a dollar a day extra, year in and year out. He is not as good a mechanic as some other men who do not get the pay he does. He always does his best, however, and he is a *growing* young man. In fact, he could not well be otherwise. Do some of you want to know whether his becoming a Christian made him more reliable? Why, to be sure it did. It would be a funny sort of Christianity that did not make a man more reliable. If instead of becoming a *Christian* he had become only a *hypocrite*, then of course it would make him less reliable. A great deal has been said about hypocrites; but, to tell the truth, I have never found many of them in the churches. The atmosphere is not congenial.

Let me tell you another story about reliabili-

ty. A young man applied to us for work during our dull season. Finally one of my good friends in the teachers' meeting—a woman who has busied herself all her life in looking after the unfortunate—put in a strong plea for this young man. She said he had recently married. She knew that would please me, for I am always glad to hear about good young men and women getting married. Then she said she was pretty sure he either had been or was thinking of taking a start in life as a Christian. When business started up I sent for him, feeling glad I could give him a chance. He did exceedingly well; and every one with whom he worked admired his manliness and energy, and he was soon promoted. In our business councils his name was mentioned, and we had much hope that he would be able to fill some important post with good pay. Before he had been in his new place two weeks, however, a conversation something like the following came up. The foreman of the packing-room, who loads a car almost every day, besides filling no end of small orders, has perhaps a dozen good reliable men immediately under his charge. Well, he said:

"Mr. Root, do you know what has become of _____?"

"Why, isn't he at work?"

"No, he has not shown up since last Thursday."

This was on Monday.

"Did he not tell you he wanted to be away, or has he not sent any explanation of his absence?"

"Not a word, and I need him the worst kind."

I immediately went to the time-clerk. She said she had said nothing to her about being away, but came around Saturday night and drew his pay, and walked off. He said nothing about being absent Monday—not a word as to whether he would or would not be back to work. I hunted up his brother, and he expressed surprise. He said he was pretty sure his brother was not sick, and did not know why he should be off. Monday afternoon as I was rushing past I caught a glimpse of somebody, but he did not look up enough so I could be sure who it was. I turned around after I had got past quite a little way, and sure enough it was _____. Some time afterward I passed Jacob. By the way, Jacob is now the foreman of our packing-room. Some of our older readers will remember the Jacob at that mission Sunday-school, who used to be so prompt and reliable in having a text every Sunday, rain or shine, and Jacob used to repeat his text so clearly and plainly that everybody in the old schoolhouse heard every word of it. By the way, I wonder if I dare stop long enough to meddle with the affairs of one other "home" to just whisper in your ear. Now, don't tell anybody. Up at Jacob's house they have an *eight-pound boy*. He came to their home last night, the last day of April. I declare! since I have told so much I must tell you that the boy's mother used to be *queen-clerk* in the office.* Now let us go on with the story.

On the day in question, as I passed Jacob I stopped and remarked:

"Oh! I see _____ has come back to work. What reason did he give for skipping out without saying a word when we were so badly rushed?"

"Why, he did not say any thing until I overhauled him a little, and then he explained that he stayed out to plant his potatoes; and after the potatoes were planted he went *visiting* a day or two.

Now, may be I have not stated the whole matter as it should be; but in any case I think it illustrates my meaning. I do not know what the custom is in other shops and factories. In fact, I have been feeling for a few days as if I should like to know. Do men who occupy important positions of trust and responsibility stay away to plant potatoes, or to make garden, without saying a word to the foreman of the room, to the time-clerk, or to the man who employs them? If that is the way to do, here in this land of "liberty," I will try to put up with it and not scold. But, dear friends, did you ever consider that this fashion of going through life cuts a terrible slice out of your daily wages—just one operation like the one I have mentioned above? I am very sorry indeed to hurt my young friend's feelings, but in the very nature of things such a proceeding may cost any young man hundreds of dollars before he gets through with it. Every little while somebody is sick. When it comes to the women-folks, somebody gets married (as the queen-clerk did), or vacancies occur. Then the question arises in our cabinet. "Who shall fill the place?" Many names are suggested; but almost the first thing that comes up is, "Is he reliable? Will he be on hand when wanted?" You see, with our methods of management, a missing hand, without previous arrangement, is like a link being lost in a big chain. A telegram comes in regard to an order that is being filled. The clerk who is away sometimes has charge of the order or other papers, and nobody else can find them. A man decides to put in some special crop. He sends a telegram, and wants his order changed. It may be possible to change it before the goods are off, if we could get charge of the matter. If the clerk who is needed is gone, other clerks tumble business papers over, may be throw them out of shape, and so lay the foundation for other mistakes, and perhaps even then fail to get hold of the thing needed until the train is gone. We have had men stay away with the *keys of the warehouse* in their pockets. I you should see your old friend A. I. Root at such a time as this you might know something of him then that you never knew before, or would not have known otherwise.

Just a word about going visiting. It is a good thing to cultivate sociable relations, I know; but it seems to me that April and May are two months in the year when but little visiting should be done. It is well enough for old men, and those out of health, to go visiting; but even then they should be careful about wasting the time of busy men.

It is a grand thing to have a garden; yes, I like to see every man have his own or even a rented home have a little patch of potatoes. But a man may be unwise about potatoes as well as other things. I would have the potatoes myself; but I do not think I would desert my post in the month of May to get them in. If working-hours were so long as not to afford time, I would plant them by moonlight, or, better still, between daylight and time of work in the morning. I think I would manage to do my visiting during dull seasons, if it could not be done evenings and mornings. There are almost always lulls in business. If a man comes to me and says, "Mr. Root, if it should come handy to spare me three or four days, or a week, without hindering business now, before a great while, it would be quite a favor," and such a request is made a week ahead of the time, or may be a little more, we can almost al-

*May be some of you would like to inquire whether Jacob was on hand to look after his gang of men the day he first became father. Yes, sir, he was on hand as usual that day and the day after. He got up very early in the morning about that time, and did considerable rushing about; but he knew the situation of affairs, and stuck to his post right through every working hour.

ways bring things around so as to spare the one who wants to be absent; and if he does not want *too many* vacations, it does not spoil the man's usefulness and money value. A good many times when we have had more help than we really needed, I have asked several (one after the other) if they had any work of their own they wanted to do, or if they would not just as soon go visiting for a week, or something of the kind. By the time I have spoken thus to half a dozen men, I am sure to find one who wants just such a favor. Some of you may ask, "Mr. Root, if you object to anybody taking a day or more without previous arrangement, do you on the other hand always expect to provide work all sorts of weather for those in your employ?"

To which I reply, "Yes, sir, I do." It is something almost unheard of for a man to come to his place in the morning, and be told that there is no work, unless a breakdown happens, or that we are obliged to shut down for repairs. In order to do this we sometimes set a man worth \$1.50 a day on something that a boy worth 50 cts. can do almost as well. We do this for a short time rather than annoy him by asking him to lay off. While I was absent in the winter, I believe some of the hands were stopped temporarily on account of the weather. Had I been home, however, I could have set even these people at work. "As ye would that men should do unto you, do ye even so unto them."

I have sometimes felt like asking the question, "Well, my friend, for whom are you working, anyhow?" If somebody comes to you begging for work, and you give him a job, is there not a general understanding that he works for you alone until that job is finished? Come to think of it, I do remember one man who was away from his post so much that we began to inquire into it, and finally found out that he took jobs here and there, whenever he could get 25 cts. a day more than we were paying him. Of course, it is every man's privilege to do so if he thinks best. But does that kind of work pay? Surely not in the end, for people often come to me offering to work at *very low* wages providing I will give them a steady job the year round, they evidently having discovered by experience that steady employment every day, right along, is much better in the end than a day's work here and there, even at a higher price.

It just now occurs to me that my talk to-day may sound like fault-finding. I do not mean it to be so. Only a few feet from where I sit dictating is a woman who has been in my employ something over 26 years. A little further off is a man who is nearly forty, who has been in my employ steadily since he was a boy in his teens. Our stenographer remarks here that our boss printer has done better still, having been here for 26 years, or ever since he was in his teens; and he himself, who is writing down these notes, is just now finishing up 16 years here. When he commenced we talked perhaps 15 or 20 minutes about the matter of wages and work. In all these years he has had a job every day if he has wanted it, and his pay has been forthcoming every week, without an exception. I have learned to regard these old and tried friends with almost as much faith in their being at their post as I do the rising of the sun; and I presume they in a like manner have faith not only in my good will, but in my ability to guide our little ship (business ship) safely through the financial breakers. I need hardly say these friends have good pay. These pleasant relations were all built up by an energetic *reliability*, if that is the way to express it.

Now, I have been moved to throw out these hints as suggestions, especially to the younger people—the boys who have just *got married*, for instance. Sometimes the consequence of one man leaving his post for only a single day, without notice, in a large factory, is disastrous, not only in loss of money, but I think it sometimes brings about loss of life. A few days ago my attention was called to a pile of lumber that was put up so badly that high-priced choice boards were almost ruined. The boss of the lumber-yard explained it this way: He commenced the pile, and carried it up three or four feet; but as it was haying time, somebody wanted him badly to help get in hay. He was permitted to go, and another man was hastily and perhaps thoughtlessly directed to go on piling the lumber. The first one had been educated in his work, and knew just what to do and how to do it. The one who took his place had had little or no experience in that kind of work. There was a clear sharp line where the good lumber ended and where the damaged commenced. Once in a while we find a man who says:

"I should like to be away this afternoon, but I have arranged to have my work done by somebody who will do it right. If any thing comes amiss because it is *not* done right, just charge it up to me and I will pay the damage."

Now, that makes quite a different matter of the whole affair; and when a man speaks in that way, and his past record shows that he is *good* for all he undertakes to do, his money value is likely to *come up* instead of *go down*. I feel quite sure that the great world at large does not *understand* how it is that one man gets big wages and another one low wages. You may say the result of my teaching would be too many high-priced men. Not so, my friend. Every time a man is wanted to take charge of a department or of a company of men, we have hard work to find one competent. Ordinary day laborers are always in *great plenty*; but reliable men to take charge of and furnish brains to look after the muscle, there are *never* enough to go round.

I can not think of a better ending than to put right in here a letter that was put into my hands just as I dictated these last words.

Dear Friend and Brother—I feel that I have a right to call you brother now. I write this to you first, from a sense of duty; and next because I know it will rejoice your heart to know that another of the GLEANINGS family has found the Lord. I had strayed away from God for many years; but I have the blessed assurance in my heart that I have been washed clean in the precious blood of Jesus, even if I have returned at the eleventh hour. However low down in sin I have been, I have always found time to read your Home Papers when I have had time to read GLEANINGS. Never give up those little sermons. You don't know—you can never know this side of heaven—the good they are doing. Nothing in the world would give me greater pleasure than to take you by the hand; but that may never be, perhaps, in this world. But by the dear Savior's help I expect to meet you in glory.

Your brother in Christ,
San Francisco, Cal., Apr. 27. HENRY S. THOMAS.

Dear unknown friend, you knew then, did you, that it would rejoice my heart to hear of a reader of GLEANINGS who had started out for eternal life? Now, dear brother, hold steady, and beware of the tempter. Ere many days he will try to cripple you and lead you astray. Stick to your Bible; go to your Savior every day and hour, and you will not only succeed in holding fast to the new bright life, but you will always find there are "more to follow." May God bless and strengthen you, and all the rest of the new converts that GLEANINGS reaches.



A DROUTH IN MAY.

I believe the above is something I have never known before. But there are many pleasant things about it after all. And do you know I rather enjoy these unusual features of the weather the great Father has seen fit to send us? Whenever any thing happens that the oldest inhabitant has "never seen the like of before," there are always many interesting things about it for me. In fact, I almost always find new possibilities. For instance, during this dry first of May there is no trouble in pulverizing the ground just as fine and nice as we would do in August. I have told you a good deal about our creek-bottom garden and Champion Brook. Well, this brook is worth some money just now. By the way, is there any sort of brook running through your lot? If so, you are lucky. If you haven't one, I would try to make one in the lowest part of your ground—some old natural watercourse. If you have already got it well tile-drained, have some silt-basins or little wells put along at convenient distances, for dipping up water.

Now I will tell you why you want a brook. We are again sold out of strawberry-plants—that is, we can not fill orders without taking up the plants that are to produce our fruit. But we do this rather than disappoint our customers; and as a consequence of being short we are making plants just as fast as we can by the aid of this beautiful warm sunny weather. Perhaps I should say we are making preparations for plants rather than making the plants themselves, although we have runners started already, where we have taken pains to pick out the blossom-buds and *push* them for runners. Well, our new strawberry-plantation is right alongside of Champion Brook. We plowed the ground, fined it up, mellowed it, rolled it, and marked it. Then as the plants were to be moved only a few rods, we took them up with a good chunk of dirt adhering to the plant, and set them in rows parallel with the brook. As it was Saturday (and no school), the largest part of my Sunday-school class were helping. Ordinarily I dislike to have a lot of boys transplanting, because they run about so much and tramp up the ground; and if it is the least bit wet, it gets stamped down so hard it bakes. The ground is so dry now, that, the more they stamp it with their bare feet, the more they mash up the lumps. Every thing is dry, and nice to work with.

When the plants are all in, with a ball of earth adhering, as explained above, then the boys dip water out of Champion Brook and give each plant about a pint, so it can start out housekeeping in good order. To test the value of a pint of water under such circumstances, we left one row Saturday without watering. I did this because there were indications of rain, and I thought I would see how much difference it made. Sunday, May 5, was exceedingly dry and hot—about 95 degrees in the shade, with drying winds. The plants that were not watered were most of them apparently dried up, while the others were just as fresh and bright, almost, as if they had not been moved. I went over this matter when describing the use of transplanting-tubes. We did not use tubes this time, because we found we could take up a ball of earth, with a narrow round-pointed ditching-spade, almost as well as to use the tins; and it is quite a little trouble to pick up the tins and carry them back and forth.

I do like to work soil that is dry enough so you can pulverize it and level it off and mark it out without having things stick. Then, as I said before, the running and tramping about does good rather than harm; and with water close by, say only a few rods from the plants, the whole length of the field, it is not a very big job to do the watering.

HOW TO TRAIN THE GAULT RASPBERRY FOR FRUIT.

Friend Gault—at least when I visited him—has never used any trellis at all for his raspberries. The bearing canes go up into the air, and then go down and root at the other end; and this supports them pretty well from the ground—that is, with the old canes. But his berry-patch is pretty well tangled up; and if you don't look out the vines catch on your clothing, and get broken and in disorder. We have just finished taking out the young plants, and this left a great lot of long canes trailing on the ground. It was a very difficult matter to cultivate between the rows; and another thing, the fruit would be sure to be down in the dirt unless there were some sort of support. We got out some oak stakes, 2x3 inches, and 4 feet long. These were driven, with a big sledge, at each end of the row, and some heavy galvanized wire, such as is used for grapevines, was stretched from one end of the row to the other. Then, to prevent the wire from drooping clear to the ground in the middle of the row, more similar stakes were placed, say about every 40 or 50 feet.

Now, then, we are ready to pick up these long loose canes and tie them to the wire. But I have found tying with strings to be slow business, so I got some small galvanized wire, about like that used for the lightest poultry-netting. I got a pair of tinner's shears, or snips, from the tin-shop, and wound this light wire, say a dozen times, over one of the blades of the snips. Then by shutting the shears together we had a lot of oval rings open at one side. They are shaped something like the letter U, made of wire, but the ends were pretty close together. The boys take a lot of these wire loops, slip them around their suspenders so as to have them handy when needed. With one hand they lift up a raspberry-cane, and with the other they slip a wire loop over both cane and wire; then the loose ends of the loop are twisted half a turn. Do not twist them any tighter, because after the cane has done bearing we shall need to open the loop so as to get it out and put a cane of new growth in its place. We spent quite a little money in tying up raspberry-canapes last fall with strings; but when spring came, the motion of the wind sliding the string along the wire had cut off a great many of them. With our Palmer and Gregg raspberries we also found a good many shoots winter-killed after we had been to so much pains to tack them up to the wire. So far the Gault raspberry has never winter-killed at all; but every cane was fast at both ends. The old root was attached at one end, and the new plant at the other end. My experience is, a raspberry-cane is much safer from winter-freezing when both ends are well rooted in the ground. So long as you want to raise plants, the Gault raspberries may always be thus rooted at each end.

Now, it is some work to put up stakes and wire, and tie up the canes; but the straight rows look very much better, the picking is much easier, and then it is so much pleasanter to cultivate raspberries that are tied up. While visiting E. France I got the idea of tying blackberries to a wire in the way I have described. With the latter, however, you need taller and stronger posts, and a much heavier wire; but

for raspberries, I think the wire need not be more than $2\frac{1}{2}$ feet above the ground. This keeps them out of the dirt; and it is so low, if you want to go "crosslots" you can hold the wire down and straddle over it—that is, if you are a man of average stature.

One thing more about having your garden with rows parallel to the brook. Of course, said brook should be made to go straight through your premises. You can not afford to have it crooking as brooks usually crook. In order to have it handy for irrigation, it is not necessary that water should always be running in the brook. Scoop out some holes at intervals, and these will be filled at every summer shower. By making them of sufficient depth and length you can have water enough to keep things going, even during a very severe drouth. These remarks are intended, of course, only for using the water so you can transplant during very dry weather. After you get your stuff well going, there is seldom much need of irrigation if you keep the cultivator constantly moving, so as to preserve a mellow surface. Besides, creek bottoms, as a general thing, have more or less sand or gravel in their sub-soils; and I have found this to be the case, even in heavy clay soils.

Have your brook arranged, however, with ample outlet, so that, if you have a June freshet, the water may not come clear over your stuff. In order to get rid of the effects of freshets, Champion Brook (through our ground) is from 4 to 6 feet deep, and perhaps 10 feet wide at the top, and 6 feet wide at the bottom of the channel. The sides are kept from caving in by means of cedar posts and hemlock boards. As fast as we make tin scrap in our tinshop it is packed down back of the boards, so that, by the time they rot out, the tin scrap will very likely have rusted together so as to make a permanent wall to resist the effect of high waters. Of course, we have to do more or less cleaning-out of the brook every spring.

About midway in the length of the brook, in the center of our garden, we were lucky enough to find a spring with sufficient force to raise the water 15 or 20 inches in a large iron pipe driven over this spring. This spring furnishes drinking-water all through the summer, and near where a great part of our work is done, and is worth ever so many dollars to us every summer. Now, if you have not a garden in your lowest piece of ground, with a brook running through it, you are missing lots of fun and lots of profit to one who loves to work in the ground and see things grow during a drouth.

GETTING RID OF WEEDS IN THE PLANT-BEDS.

One of the expensive drawbacks in raising vegetable-plants has been the weeding; and one trouble with the weeding is, that the boys get lazy, and lose interest when we set them to picking out the weeds between the plants, especially if the beds are very weedy. You may say we should not let the weeds go to seed. Well, we don't let them go to seed. The stable manure we are buying constantly, furnishes fresh seeds; and there is no other fertilizer as cheap and effective as stable manure.

Now I will tell you how we worked this spring. We have a larger area than heretofore, and therefore we can spare the use of a bed for a week or ten days better than when we were cramped for room. Accordingly the beds are made up as heretofore, the soil sifted so as to have the finest and best dirt on top, the bed nicely leveled over with a strip of board; and then if it does not rain it is watered and left before planting until the weeds have about all come up. Then on some hot day the surface is chopped up with a sharp steel rake, and once more sifted with a fine hand-sieve. This takes

out all the weeds, but lets the fine earth go through. Now smooth off your bed, and put in either plants or seeds, and your crop will cover the ground before weeds of any account make their appearance. In this way we get rid of weeding almost entirely, and the surface of the beds gets to be so fine it works almost like flour. If there is old rotten manure enough in it to put a rich dark color to it, this fine surface will bring up almost any thing in an incredibly short space of time; and if you put in plants they get hold and make an astonishing growth in a time that would seem almost incredible to one unacquainted with soil just right in richness and tilth. The sieve we use for this last sifting is a 10-cent square sieve for coal ashes. You can find them at almost any of the 10-cent stores. They are very light to handle, and so cheap you can afford to leave them out in the rain, without being much out of pocket.

A word more in regard to getting the soil into such a fine state of subdivision. Within a few weeks the *Country Gentleman* has contained some excellent articles on preparation of the soil; and T. B. Terry has taken it up in the *Practical Farmer*, quoting from the *C. G.*, and adding emphasis from his experience; and I will tell you what we have been doing right along in this line during this dry month of May. We ordinarily cover our ground with a heavy coating of manure before plowing it under; but for potatoes we do the manuring the year before; therefore there is nothing to hinder working the ground up fine and soft before it is plowed. We do this with a two-horse cultivator having all the teeth in, and the roller. In fact, we get the ground fine enough to put in a crop before it is plowed at all; then when we turn it over with a plow it is finely pulverized soil down where the potatoes can make their growth. After it is plowed we fine it up again, and use tools going down deep enough to get to the fine soil turned under. I am getting to be notional about the way my plowing is done. I want the best plow I can get, and either a new point or the old one properly sharpened as soon as it becomes dull. On our creek-bottom ground we make the plow go down nine or ten inches. If it hits a stone or hard place, and then runs up, we back up the team and do it over again. After the plowing is done scientifically, then with the cutaway or Acme harrow, alternating with the roller, we get it just right, on the same principle that we fix our plant-beds, only, of course, we can not go to the trouble of sifting several acres. It is not so very expensive, when the ground is just right, to get a mellow seed-bed nine or ten inches deep. All the potatoes we raise are planted by hand. The furrows are made by Darnell's furrower and marker combined. The revolving disks make an additional fining-up, and the potatoes are finally placed with about four inches of fine mellow earth under them, and four or five inches of soft mellow earth over them. If you do this you will have a crop without any expensive commercial fertilizer, and without very much stable manure—that is, where you have a soil such as we have here in Medina. I know conditions are different away down in Florida, and possibly in other places; but with our clay soil this thorough fining and pulverizing answers to a great extent in place of the manure.

If you want more on this subject, especially fuller details, read Terry in the *Practical Farmer*, along about the first of May. The address of the publishers is Philadelphia, Pa.

Since writing about fine soil well mixed by sifting with good old well-rotted compost. I have read what our friend T. Greiner has to

say in several of the papers in regard to this very matter. In taking a small quantity of valuable potatoes, like the Craig, for instance, and increasing a single tuber to the utmost, he practices pulling off the sprouts, after they have made a leaf or two above ground, and have sent up little branching roots where the sprout is attached to the potato, a good deal as we do with the sweet potato. These sets may be pulled off and planted out; but to make a success of it you want this kind of fine rich soil I have been talking about. I suppose florists would call it *potting-soil*. There are many grades of this potting-soil; but when we get some that is real good it will start potato-plants, or any other kind of plants, with almost no effort or care at all. For instance, when we put out plants in our plant-beds, if the sun shines during the month of May we must both water the plants and shade them during the middle of the day, in ordinary soil; but if you have plenty of the very best kind of this potting soil, if you put out good plants over night, and give them a pretty good wetting, they will have caught on to this good soil even during the night, so they will stand up all next day in the sun unless, indeed, it shines tremendously hot, with severe drying winds. The plants will do this with such soil where they would need to be shaded a week in ordinary garden dirt.

I have mentioned before doing quite a trade in furnishing this potting-soil. We get 10 cts. a peck or 25 cts. a bushel for it; and where we give a real good article, everybody thinks it is cheap, and is sure to come again. But if I am away from home, the boys are pretty apt to fill the order from some bed where it is only tolerably good. When I tell them that at this price they ought to have the very best we have—even that right out of the greenhouse-benches—they are apt to demur, and think we can not *spare* it. Why, 25 cts. a bushel would pay for clear stable manure, and we can make a very nice potting-soil with a half or even a fourth of well-rotted manure. A great many times we can find just the very best of this stuff where an old hogpen, stable, or even poultry-house, has rotted down in some obscure corner. I think the best I have seen was where we put a great lot of poultry-manure in one of our greenhouses. I feared it would kill the plants; but by spading the ground down very deep—say more than a foot—and sifting the whole together repeatedly, it did not hurt the plants—at least very much. But it did not get to do its best until it had been worked and turned over for about one year, and then it was just beautiful to look at or to handle; and any thing that was given a chance would take hold and begin to grow almost in one night, and the plants would cover the ground, and need transplanting again, almost before one could turn his back. Oh what bright, clean, smooth-looking foliage—cabbage, celery, tomato, and every thing else! Somebody has put in a caution about getting the ground too rich for vegetable-plants. I never saw it too rich myself, providing they had plenty of sun and air, and were transplanted further apart just as soon as they began to crowd each other in the least.

I often read the piece on the third page of "Bees and Honey," and sometimes the tears blind my eyes. I know you must be a good man to meet with such wonderful success—once a laboring boy and now keeper over such wonderful works. As a rule I make things prosper along *my* path. I commenced empty-handed, but now it is quite different. I am bound to make the bee-business flourish in this valley. I have always kept bees, but on the old plan, which amounts to nothing.

M. A. BELLows, Griffin's Corners, N. Y.



HONEY FROM THE FLORIDA WILD PENNYROYAL.

Around friend Poppleton's, and at other places around Indian River, we saw a plant which they call pennyroyal. It is not a bit like the pennyroyal of the North, however, but it is rather a sort of vine with a pennyroyal taste. It spreads and grows of itself, with even just a little chance, and friend King is preparing now to plant out ten acres. I suggested moving his bees to some place where he could have *hundreds* of acres without the trouble of planting it. But he thought he could prepare and plant ten acres around his home cheaper than to move his bees, etc., to where the pennyroyal is already.

Friend King asked me the question whether bees always gather honey when the flowers yield it. Of course, I said they would; and when he went on to tell me of a time when the black mangrove yielded so much honey that it actually dropped out of the blossoms on the leaves below, and the bees would not touch it at all, I was going to accuse him of superstition. He finally explained it by saying they had a sort of salt-water fog, or spray, that covered the blossoms, bushes, and all, until the honey tasted of the salt. After they had had a good rain they washed out the salt honey, so that some more was secreted, and then the bees went at it again with a great boom.

MORE ABOUT THE SHELL MOUNDS.

Close by friend King's ranch, a spur, or side-track, branches off from the main road, and runs down to a shell mound on the banks of Indian River. This side-track is solely to take shells by the carload to the adjoining towns and cities for paving the streets. As soon as I was able to walk half a mile or more we went over to this shell mound. The shells had been shoveled away, and the track pushed off into the mound until in places a wall of solid shells rises almost perpendicularly beside the track, up fifteen or twenty feet. Was this great mound or hill made entirely of shells thrown away after some former race of people had used the contents for food? One feels a little incredulous; but as he examines the shells and finds they were broken open much as we open them now, and the large conch shells mixed in, each one of them having an opening broken in at just the right point to scoop out the edible portion, it begins to look as if it must have been the work of human beings. Besides this, at different points along up the wall of shells we see strata of dirt, debris, ashes, charcoal, and even broken pottery, indicating that the people who lived there encamped for some time on a certain spot, and that this spot was at a later date vacated and covered up with a foot or two of shells; then another encampment, and so on. Are these shells valuable only for road-making? Yes, they can be easily burned into lime, to be used for plastering houses, or to be spread on the soil where lime is needed; and some excellent results have been obtained by using these burnt shells for a fertilizer. One trouble is to get the fuel to burn them.

WAXING HONEY-BARRELS.

Before I finish up my visit at friend King's I want to speak about barrels for honey. In that warm southern clime, where frosts are so seldom known, there are great varieties of insect-enemies that we know nothing about. For instance, if you leave a boat in the water for any

length of time, the *Teredo navalis* will eat it full of holes and make it worthless; whereas, if the boat had been taken out of the water, and kept in the air, it would have been unharmed. So you see Florida is harder on ship-shod managing than almost any other place. Every little while we see the results of slothfulness in beautiful boats that cost large sums of money being left in the water, to be eaten up by the teredo until they are next to worthless. Another insect delights in making little holes through the sides of honey-barrels, or any other kind. Friend King says that, no matter whether your barrels are made of oak, cypress, or any other timber, and no matter how carefully you put them away where they won't dry out, it is never safe to put honey in them until you have waxed the whole inside according to the directions so many years ago laid down in the A B C book. Wax the barrels just before they are filled, and they are safe and sound, and honey may be shipped clear to New York, without the outside becoming sticky at the least. He finds paraffine to answer just as well as beeswax, and it is very much cheaper.

Talking about shells reminds me that, while visiting Harry Mitchell, near Hawk's Park, we were shown a strip of ground in front of the house, all covered with broken shells. It was outside of the dooryard, along the main roadway, and I was much surprised to learn from friend Hart that they secured excellent crops of onions and other garden vegetables right in among these shells, although we could hardly find a bit of soil of any account.

This recalls that I omitted in the proper place to mention the very pretty little home belonging to friend Mitchell and his good wife. An artesian well of considerable volume attracted my attention in the back yard; but it was too warm, and too strongly impregnated with sulphur, to prove very palatable. Friend M. has, besides his apiary, quite a pretty yard of fruits and flowers, and a valuable collection of curiosities from Florida and other parts of the world. Although he himself is in quite poor health, we are reminded, by looking back at pages 860 to 863 inclusive, of GLEANINGS for Nov. 15, 1894, that he secured last season the enormous honey crop of 21,500 lbs. from 57 hives, or an average of about 377 lbs. per colony. If anybody has ever made a better report than this, either in Florida, California, or any other part of the world, it seems to me it can not be very much ahead, all things considered.

Sanford, Fla., is a very pretty town of about 2500 inhabitants. I was much interested in the spacious waiting-room at the depot, especially as said room contained a large open fireplace with a cheerful fire burning, made of pine logs resting on old-fashioned andirons. I had been suffering a good deal from chills, and it seemed hard work, a good many times, to get thoroughly warmed up, even down in that land of flowers and sunshine; but the big fire of pitch-pine logs filled the bill to my heart's content.

After getting well warmed up I enjoyed a walk for a couple of miles to the little station of Fort Reed, where friend McMillan has his home. Here I met with such a warm welcome from all the inmates that I did not quite understand it. My friend and his good wife, however, made haste to explain. If I am correct, they moved to Florida on account of ill health. There they found good health, but did not succeed in finding any thing suitable to their case for earning a livelihood. While thinking over the matter, and, I believe, praying over it (for they are devoted Christians), a sample copy of GLEANINGS fell into their hands. Both husband and wife soon became deeply interested, got some bees, and commenced. Although they

are well along in years, and in feeble health, as the bees increased their enthusiasm and strength seem to increase also, to meet the emergency; and right in the spot where nobody else ever thought of raising honey they have made excellent crops, and increased their bees to something like 100 colonies. Instead of selling honey at five and six cents a pound, as some others have done, friend M. started out to develop his home market. He carried samples to the big hotels, and took orders at from eight to ten cents per pound, if I remember correctly, being exceedingly careful to furnish only a first-class product, even though almost their only source of honey is the saw-palmetto; and that is why they sent me an invitation to call, and felt so glad to welcome under their own roof the man who wrote the A B C book.

I have before mentioned that a new industry has sprung up in Florida during the past winter, in the way of furnishing firewood. I was surprised to see the number of colored men with a bright new one-horse wagon, ditto harness, and a fair-looking mule with which to draw wood to town. They go out of Sanford a couple of miles, and get a very nice pine-tree, as it stands in the woods, for 25 cts. The horse stands hitched to a tree while the owner cuts up the load of wood. Then he drives to town and gets a dollar for it. I suggested, as a matter of economy, that the man employ somebody else to cut the wood whilst he goes with a load, thus taking ever so many more loads in a day; and I said, also, that one man could drive two horses as well as one, and thus double the output. Friend M. assured me, however, that I did not understand the colored race at all, or I would not make such suggestions. He said it was accepting considerable responsibility already for one of these men to keep his horse going every day, let alone hiring somebody to help, or, worse still, thinking of having the care and responsibility of two horses. And observation seemed to back up his assertion. Every thing is done on the one-horse plan—especially where the colored people manage it; and the one horse, instead of doing a whole day's work, stands still in his new harness, hitched to the brand-new wagon the greater part of the time.

In the vicinity of Sanford are many beautiful lakes, and some of the finest orange-groves, perhaps, in Florida. Where there was so much lamentation because the garden-stuff was killed by the frost, I suggested to quite a number of the gardeners that they try their hand at hardy vegetables that would stand a freeze; and at Sanford I found an onion-patch of nearly an acre that was comparatively unharmed. The proprietor, however, was a little above the average gardener. He had got his ground under high cultivation, and made very rich, so that the onions had vigor and vitality enough to stand the blizzard and to keep on growing.

I found one of friend McMillan's boys very busily occupied, together with a neighbor's boy, in building a boat. This boat was to be launched on Lake Jessup, within a short distance of their home. The boys were making their boat of sufficient size so they could camp out in it for several weeks, and have room enough for their provision, bedding, etc. By taking advantage of the lakes and rivers, they can get so near Indian River, that, by hiring a team to pull their boat across a mile or two, they can go clear down to Lake Worth, and from there back up to Daytona and Ormond. Of course, the vessel is to be run by sails, so the boys may, by giving their time, make quite an exploring-excursion, and see a good deal of the world, being out of pocket only what is necessary for food and clothing. A great many have made



ON PALATLAKAHA RIVER.

such trips as this, and have found them, where properly managed, very enjoyable. I could not but share the boys' enthusiasm; for it brought vividly to my mind the time when I, although only 18 years of age, felt that I could not stand it any longer without seeing a little something of this great world of ours in which we live.

When I wrote up the electric gasoline-launch on pages 143 and 144, I planned to give you a picture of some of the Florida rivers with one of these pleasure-boats on it. Here it is.

A young man on the cars gave me the photo. He owns the larger of the two boats, and makes it his business to carry tourists.

ELECTROPOISE, ETC.

MORE ABOUT THE ELECTROPOISE.

Mr. Root:—I have been very much interested in your expose of humbugs and swindles, particularly that of Electropoise. You say, "If it does perform cures it is exactly in line with the idea that a horse-shoe nailed over a door wards off disease." My idea about the matter is, that a great many people have been really benefited by Electropoise, but exactly on the same principle that people are benefited by faith cure, Christian science, the waters of Lourdes, the relics of saints, the laying-on of hands, etc. If people, when they employ these remedies, thoroughly believe that they will be beneficial, then, as a result of that belief, they will be benefited.

The imagination has a very powerful influence over the functions of the human body. You say that a brass button, with a wire attached, would be just as efficacious as the Electropoise apparatus. That is undoubtedly true, provided the person using it thoroughly *believed* in it.

Covelo, Cal., Apr. 25. **THOS. B. HENLEY.**

[Friend H., if I am correct you do not mean to reflect on a proper, right, and reasonable faith in God. I have closely inquired into the matter of faith cure, Christian science, etc., not only around my own home, but in Florida and California, and I have watched the records from other places. While there are some remarkable cases of recovery that we can not account for, there are also other instances of where both limb and life have been sacrificed because friends refuse to call in their family physician or a competent surgeon. Yes, there have been several cases of arrest of the parties because they neglected the usual and recognized means of saving life, and I think it was right and proper that people should be arrested under the circumstances. Notwithstanding, I have great faith, and with good reason, in constantly seeking God's guidance and wisdom in directing us what to do with these bodies of ours to escape sickness and death as far as possible. This Electropoise business will be the means, no doubt, of arousing people to the fact of how much imagination may do in the way of cures. But the guilty parties should be arrested in their swindling, all the same. Jesus said, "The Son of man indeed goeth as it is written of him; but woe to that man by whom the Son of man is betrayed! Good were it for that man if he had never been born." Again, "God maketh the wrath of man to praise him," it is true; but this by no means makes it right that they be allowed to go on in their wrath.—A. I. R.]

Inclosed you will find some clippings from *The Biblical Recorder*, of Raleigh, a Baptist paper. Is this Electropoise the same as you have reference to in your paper? If so, please send me some extra copies of *GLEANINGS*, also extra slips of the item of Prof. H. W. Wiley. I also know of a Baptist minister in my own county who sells the Electropoise, and I know of two people in my own town, whom he sold to, with no benefit—price \$25.00; but I don't know whether it is the same. If they are swindlers,

which I believe they are, I am with you to help break it up.

S. D. MATTHEWS.

Hamilton, N. C., Apr. 29.

[Yes, friend M., the circulars you send are from the very same Electropoise people we have been exposing. These people have all along based their claims on the simple fact that everybody who used their machine was either cured or made better. But here we are told of two customers receiving no benefit. The only wonder is, that anybody should receive any benefit or even *think* he had. But another appalling fact stands forth. A minister of the gospel has used his sacred calling to induce people, perhaps the members of his own church, to buy his wares; and these wares, instead of being legitimate trade and honest merchandise, are a terrible fraud and swindle—\$25.00 for that which should not cost 25 cents, and the whole thing a piece of hypocrisy and quackery at that. Religious papers have been shirking responsibility, and here is a part of the result. Friend M., show this to these poor friends who have been victimized, and advise them to demand their money back. It is a very clear case of fraud; and either the minister or the Electropoise company will hand it over very quick—probably. If they do not, tell them (the two victims) to make a plain statement in their own handwriting, and forward these statements to me.—A. I. R.]

The following from the editor of that bright new little journal, *The Market Garden*, it seems to me, throws a little light on this matter of "testimonials":

Mr. Root:—Your stand on the Electropoise question seems to me to be worthy of no censure. I am inclined to believe your correspondent on the question in the last number of *GLEANINGS* has failed to understand human nature or correctly interpret her eccentricities. There are many people in the world who only need to find faith in something to make it a panacea for their ills, the majority of which are imaginary. I am a strong believer in faith cure to the extent that, if people would only have more faith in themselves, they would have more cures than in all the patent or quack remedies under the sun. Suggestion alone is a powerful remedy; and having realized this, the cure-all people throw something in with it and reap enormous profits from the credulity of human nature. People buy the remedy, and sincerely believe they are getting well from diseases they never had, and hasten to make all sorts of testimonials, or sign those made up for them by the wise proprietors of the new medical fad.

F. W. LEAVITT.

Minneapolis, Minn.

To Keep Yourself Posted on all Electrical Frauds and Humbugs,



as well as to learn all that is interesting to know about the wonderful advancement of Electrical Art and Science, read

Electricity.



A weekly journal treating electrical subjects in a practical, non-technical and popular manner, and exposing all forms of humbuggery, quackery, and fraud, including various electro-medical devices, intended to mislead and rob those whose knowledge of electrical matters is limited.

Subscription: \$2.50 per year; sample copies free.

Electricity, 6 Park Place, New York.

Please mention this paper.



SWEET-CLOVER SEED WANTED.

There seems to be an unprecedented boom on this seed this year. We have handled more during the past six months, several times over, than we did in the previous six years. We are again in need of more, and should be glad to hear from any of our readers who have it for sale.

RUBBER GLOVES, SECONDS.

We have a stock of rubber gloves, Nos. 10, 11, and 12, which we bought as seconds, but which are so good that it is difficult to see wherein they are inferior to firsts. We are able to offer them postpaid, at 90c a pair. With other goods, 85c. Special rates in dozen or half-dozen lots.

CARLOAD SHIPMENTS.

As we go to press we are loading a third car, made up of export orders for New York, and have just shipped a second car to Barteldes & Co., Denver, Col. We are at work on the third car this year for Syracuse, N. Y., where F. A. Salisbury is prepared to take care of your orders for any thing in our line.

SECOND-QUALITY A B C BOOKS.

I find we have about 50 copies of the above, made up from sheets that were a little soiled or otherwise injured. They are just as good in every respect, and can be easily read—every page and every word. Until they are gone we offer them, cloth bound, at only 50 cts. each, by express or freight with other goods. If you want one by mail, add 15 cts. for postage. These are the last edition, and exactly the same as those we are selling for \$1.25.

HONEY MARKET.

We are finally closed out of comb honey entirely, except two small lots in hands of commission men in Cleveland. We have a good supply of extracted honey in cans and barrels. We have one lot of clover honey, which we will sell as it is, 350 lbs. in a barrel, at 8c, or put up in 60-lb. square cans at 9c. Choice basswood and clover honey in kegs and barrels at 7c; in 60-lb. cans, at 8½, or two-case lots 8c. Choice Alabama honey, in barrels of about 500 lbs., at 6c. Samples mailed to those interested.

BEESWAX EASIER.

The highest point has been reached in the beeswax market, and prices are again declining slightly. We have some six or seven tons in stock, and we decline the price we pay till further notice, to 27c cash, 30c trade, for average wax delivered here. When you ship wax, be sure to put your name in or on the package, and write by mail, giving the weight of the wax shipped. We have over half a dozen lots of wax on hand now for which we can not find the owners, as they have failed to take these simple precautions when they shipped it.

DIVIDED-TOP BROOD FRAMES.

We have nine boxes, each containing 250 thick-top frames, with divided top-bar. They are just like our regular thick-top frame a year or two ago, with top-bar in two sections, each $\frac{1}{2}$ inch wide. Those who like to fasten foundation in the top-bar by pinching between two pieces of wood, would find these frames convenient to use. We will sell them in the boxes, as packed, at \$2.00 a box, which is 80c per 100—about half the price of the regular thick-top frame. This is something we do not catalog, and we desire to close out this stock, hence this low price. We will not repack a less number for less than \$1.20 per 100.

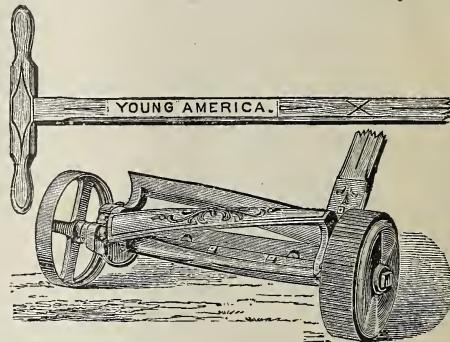
BUSINESS AT THIS DATE.

We are being crowded to our utmost capacity these times—are running 12 hours a day; and if we had enough extra competent men at hand we would have a night force at work for two or three weeks, so as to turn out the goods faster. There are but few orders that have not been shipped within a week after they were received. On Tuesday, May

7, we broke all previous records by putting up 130 shipments by freight, besides quite a number by express. In the eight days ending Saturday, 11th, we received six hundred orders, and we had left unfilled at that time 250. But we had during that time shipped about as many as received, so we are really less than a week behind.

CHEAP LAWN-MOWERS.

Here is a bargain for those in want of a low-priced mower. This machine used to be our leader, and we have sold hundreds of them. Desiring to close out present stock we have cut the price down this season to less than we paid for them a few years ago. We sell the 10-inch for \$2.00, and the 12-inch for \$2.50. In lots of 3 we will discount these prices 10 per cent; 6, 15 per cent; 10 or more, 20 per cent. They are a



good light-running machine, and a bargain at these prices. We can not supply any more when present stock is sold. If you desire a bargain, let us hear from you at once.

THE MOHERMAN BRASS SPRAY-PUMP.

The adjoining cut shows a spray-pump which we secured after our list of spray-pumps was made up. It was such a decided bargain that we bought some of them. It is made on the same principle as the Myers bucket-pump. The hose is attached to a tube running up through the air-chamber. The nozzles used on the pump are the same in construction as the Myers. We can sell this one for \$2.50; by mail, \$3.25. An eight-foot pipe extension, which can not be mailed, will be included at 35 cts. extra. There are a good many spray-pumps on the market, but I doubt if you will find one equal to this at the price at which we offer it. Special prices to dealers, on application.

PROTECTING PLANTS FROM FROST, ETC.

May 13.—Well, we got some rain last Saturday, the 11th, and, more than that, it wound up with a frost last night. We had 125 large tomato-plants, many of them in blossom; and as the frost came Sunday night, it was desirable to get them covered with as little work as possible. The tomatoes were right adjoining our pie-plant patch. After a little study I directed the boys to cut off just the largest leaves from each pie-plant, and sort them out so as to put the biggest leaves over the biggest tomato-plants. The plant was carefully turned over on its side, and the great pie-plant leaf spread over, the point of the leaf coming down right by the root of the plant. Then Ben, with a scoop-shovel, put a little fine dirt all around the edge of the leaf to make it tight and to hold it secure. It took perhaps half an hour, with three of us, and this morning our tomatoes are as bright and fresh as if there had been no frost at all. About an acre of kidney wax beans upon the hill were all laid flat, and the same with some Burpee's bush limas. Of course, I knew when I planted them I was taking a risk.

THE CurrANT AND GOOSEBERRY WORM.

This pest started out earlier with us than ever before, and with more persistence than ever before. We first tried hellebore, but it did not work very well, because all we could get at the drugstores was kept over from last year. Then we tried insect-

powder. This did pretty well, but it is more expensive than hellebore, and so we sent off for some fresh hellebore. This cost less, and did the business pretty well. But by this time we discovered that air-slacked lime answers just as well as either of the above, and costs practically nothing. You can use it in the bellows just the same as the insect-powder. Perhaps the amount of hellebore and pyrethrum that had been administered before we tried the lime may have had something to do with the success of the latter. The great thing with these pests is to take a stitch in time. Go over your bushes twice a day. Look carefully at the leaves out of sight down near the ground; and whenever you see half a dozen worms at work, go to work with your powder that very hour. If you wait over night, or, say, over Sunday, you may find every leaf off your bushes before you suspect that such a thing is possible.

SEED BEANS FOR FLORIDA AND OTHER SOUTHERN LOCALITIES.

I have told you something of the great bean industry of Florida, and that it commences ordinarily as early as December. From that time on, snap beans are shipped north until we can grow them here in our own locality. Well, they do not use the wax or yellow beans. They say they do not do as well as the green-podded varieties. And another thing, they can not raise good seed in the South. It all has to be brought from the North. Of course, where they get such extravagant prices for green beans in mid-winter, they want the very best seed to be had. After considerable inquiry there seems to be a pretty general agreement that a green-podded bean called "Best of All" is what is wanted. I wrote to several of our northern seedsmen in regard to the best bean for Florida, and there seemed to be a general agreement in regard to this variety. Now, I am going to undertake to furnish our southern friends with beans for seed for less than they now have to pay—four or five dollars a bushel. If some of you wish to turn in and help, I have no objection at all. I have secured 4 bushels to plant of this variety, Best of All, and can supply any of you, who want to try it, at the following prices: Pint, 15 cts.; quart, 25 cts.; peck, \$1.50. If wanted by mail, add at the rate of 8 cts. per pint, for postage and packing. When we get some nice seed, I think we can dispose of it readily by an advertisement in GLEANINGS or in some of the papers that circulate in the Southern States. So far as I can learn, it is a great yielder; and the dry beans can probably be furnished nearly if not quite as cheap as our ordinary field beans. Of course, I had to pay a high price to get the seed of this variety to start with. I wish some of the friends in Florida, who have grown the Best of All, would tell us a little more about it.

THE RECENT FROST.

Very likely the question is coming up with many of our readers as to what shall be done. Well, it wants some advice from somebody of wisdom and years of experience, many times, to say just what is best to be done. A year ago a patch of wax beans was, to all appearance, "gone up," as the boys say; but on examining closely I found buds between the leaves, that seemed to be unharmed. I waited three or four days, and had just about decided to harrow them up and plant again, when I thought I would wait a little longer. We had a warm rain, and almost every beanstalk started. I planted some more right after the frost, to see which would do better; and the frost-bitten ones gave a pretty fair crop of wax beans ten days or two weeks ahead of the others. Of course, the frost-bite set them back; but when they once got out leaves, the large root that was unharmed gave them a big send-off. At other times I think I have fussed with frost-bitten stuff when it would have been better to cultivate it up and plant anew. Sometimes you can plant between the hills or put another row alongside of the frost-bitten row. The latter way makes cultivation difficult. Putting a hill between the others does pretty well; but in gathering the crop it takes too long to hunt it up here and there; and unless it is worth considerable money it costs about all it comes to. If you decide to plant over, I would work the ground up thoroughly with cut-away or other harrows, fine it down, and roll it, as in the first place, then put in your crop just as nice as you know how. As the second planting comes right in the very best part of the season, it will oftentimes give a much better product than the first, any way; but on most things

grown by the market-gardener the *prices* will generally be considerably lower. Whatever you do, do not get the blues, and let your ground grow up to weeds. Get at it and do *something* at once.

MY NEW WHEEL FOR 1895.

I have had it some little time, but I did not mention it, because it took me some little time to decide that I liked a wheel as light as an 18-lb. Rambler. When I undertook to ride it with my winter clothing, overcoat, heavy boots, etc., somewhat the wheel and I didn't get acquainted. But the warm weather came, so I could put on my light summer clothing, light shoes, etc., and I have just begun to comprehend what it is to fly through the air, with almost nothing to add to the momentum of my own weight. Well, now the wheel and I have become inseparable companions. The old one seems heavy and awkward. In fact, it is just as each succeeding *lighter* weight has *previously* thrown the others into the shade. I get on and off now with the greatest ease, and ride as slowly, if necessary, as one would walk, and go around obstacles almost easily and safely. At the same time, when I have a good stretch of road there seems to be almost no limit to the speed that may be attained. By the way, I wonder if the next great move in this world of ours is not going to be along the line of dropping useless weights and encumbrances; or, to put it in a spiritual sense, to "lay aside every weight, and the sin that doth so easily beset us, and run the race that is set before us." Somehow I seem to have gotten my text at the end of my little sermon; but, my good friend, if you do not weigh any more than about 130 or 140 lbs., and if you have never tried an 18-lb. wheel of the present date, let me suggest to you that there is a treat in store for you. By the way, I have not had any long rides yet this season, principally because my presence seems *at this season* to be so urgently needed every day here at the Home of the Honey-bees.

Kind Words From Our Customers.

The Crane smoker you sent me is the best I ever saw.

W. B. AIKIN.

Riverside, Tex.

My goods were received O. K. They are the finest I have seen. You may look for my future orders.

HENRY E. LIVELING.

East St. Louis, Ill., April 27.

The garden seeds I ordered of you by mail came all right in just four days from the day I ordered them. We get just about twice as many seeds for the money from you as we can at the stores here. Please accept thanks.

MAD TALBERT.

Morristown, Ind., Mar. 11.

The goods ordered Apr. 4th arrived safely and in good condition; also the queen ordered on the 8th. She has been introduced successfully. My reason for ordering goods of you in preference to buying nearer home is, that I am always sure of their coming in good condition.

W. W. CONNER.

Washington, D. C., April 29.

ONE BIG COLONY WORTH TWO OR THREE SMALL ONES.

I make just as few swarms as possible, as one large swarm gathers as much honey as three or four small ones. The bad windy days for handling bees I am busy making or putting together and painting those new hives I got from you, which are the nicest you ever sent me. You have really outdone yourself on this order.

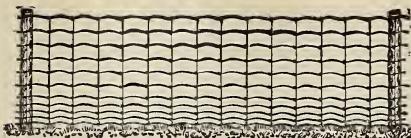
H. T. GIFFORD.

Vero, Fla., April 22.

Your card of the 16th ult. is at hand, also GLEANINGS for March 1st. In reply to your request for postals regarding "hive argument," I say keep it up and we will sift the grain from the chaff. GLEANINGS is getting better each year, and all are given a fair hearing. Bloom is coming on, and bees are rearing brood very fast. Prospects are very good for a fair crop.

J. W. GRIFFIN.

Descanso, Cal., Mar. 8.



"The Battle Is Not To The Strong Alone"

If it were, we would win it just as we do now, for we stand ready to guarantee our fence to be the **strongest** of all wire fences made. We do not ask you to take anybody's figures or tables of tensile strength, but will make a bona fide test of the real article. On the other hand, if a fence must be "vigilant," "active" and "brave," there is no use looking further than the Page. It's the only **live** fence. "Dead" soft wire fences are exempt.

PAGE WOVEN WIRE FENCE CO., Adrian, Mich.

In a recent advertisement we told of our very superior all-steel hand and power feed cutter to be offered at

\$10 worth **\$40**

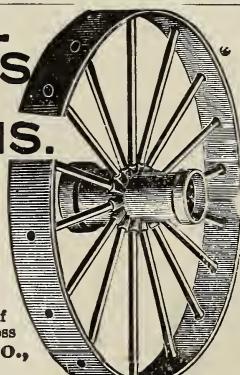
Another ad. tells of the process of galvanizing and its indispensable pre-ervative qualities. We also will give you the experience of two representative business firms of Illinois, one of whom has sold 400 and the other 500 Aeromotors. In ad. No. 4 we quote a price on the best pumps made (hand, windmill, and irrigating) lower than was ever before dreamed of, and in ad. No. 5 we talk to you of steel galvanized tanks, with covers, at the unheard of price of only 15 cents per gallon. This is cheaper than wood. They do not shrink, crack, rot, rust, or give taste to water. Read all of the Aeromotor ads.

The Aeromotor Company treats the public generously. While state legislatures are passing laws to secure repairs for farm machinery at reasonable prices, **IT IS A FACT THAT THE AEROMOTOR COMPANY HAS FOR THE YEAR 1895 BEEN COMPELLED TO RAISE ITS PRICES ON REPAIRS BECAUSE SOME OF ITS CUSTOMERS HAVE BEEN ORDERING INDIVIDUAL PARTS TO MAKE UP COMPLETE MACHINES, SINCE IN THAT WAY THEY COULD GET A MACHINE CHEAPER THAN BY ORDERING IT ASSEMBLED.** People are not compelled to buy repaired to buy repaired. was in this respect gen- sold so low that cus- buy the repairs and claim at less than the price would cost. But not certain that they deserved individual care, own reputation, the Aeromotor Company has raised the price of certain repairs in future. Not only has the given the best goods at the lowest price, but TWENTY-THREE BRANCH HOUSES THE COUNTRY IN ORDER GOODS EASILY ACCESS- REPAIRS WITHIN EASY to greatly increase this a matter of the greatest are purchasing machinery. a wise man will look to it that repairs can quickly cost. Our very low prices and high standards on everything connected with water supply and power production by wind, together with the accessibility of a full line of our goods and repairs, will be appreciated.

Aeromotor Co., Chicago.

METAL WHEELS for your WAGONS.

Any size you want, 20 to 56 in high. Tires 1 to 8 in. wide—hubs to fit any axle. **Saves Cost** many times in a season to have set of low wheels to fit your wagon for hauling grain, fodder, manure, hogs, &c. No resetting of tires. Cat'l free. Address **EMPIRE MFG. CO., Quincy, Ill.**



Promptness is What Counts.

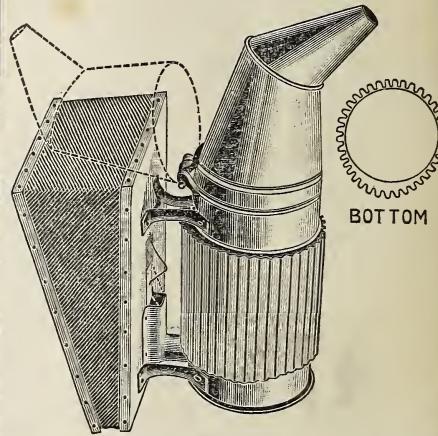
Honey-jars, Shipping-cases, and every thing that bee-keepers use. Root's Goods at Root's Prices, and the Best Shipping-point in the Country. Dealers in Honey and Beeswax. Catalog free.

WALTER S. POUDER,
162 Massachusetts Ave., Indianapolis, Ind.
Please mention this paper.



Crane Smoker 1895 Pattern.

This excellent smoker was introduced some two years ago, since which time it has worked itself rapidly into popular favor.



Patented March 12, 1895.

Its Distinctive Feature is the Crane Valve, by which the full force of the bellows is secured without waste, and by which also smoke is prevented absolutely from going into the bellows.

The Legs are of Skeleton Malleable Iron, contracted at the feet so as to be out of the way of the fingers in handling, and are secured to the bellows by bolts instead of screws.

The Shield is of Light Corrugated Tin, and bags next to the bellows, thus giving ample protection from heat.

The Cone Top easily tilts back for replenishing the smoker, and is secured by a malleable-iron hinge, the working parts of which are milled so as to insure accurate adjustment to the stove or cup.

As to Fuel, it will burn any thing, including Soft Coal, Stovewood, Planer-shavings; and it makes no difference how much the latter may be crammed down in the cup, there will be the same strong blast as before.

Price, 3½-inch barrel, \$1.85, postpaid; or \$1.50 by fgt. or exp.

The A. I. Root Company,
Medina, Ohio.